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THE SYMPTOMATIC TREATMENT OF PNEUMONIA *

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The hope for a true curative treatment for the various types of pneumonia undoubtedly lies in the field of specific therapy. There are, however, but few successful forms of specific therapy in all medicine, and for the most part the successful practice of the art of medicine has lain in the past in the direct treatment of signs and symptoms; and in spite of the more brilliant results obtained with specific remedies, it cannot be denied that symptomatic treatment has met with no small measure of success.

At the present moment it is our object while waiting for the perfection of the specific cure to consider the matter of the symptomatic treatment of pneumonia, with special reference to the attempt to find the true indications for treatment in terms of morbid physiology. Symptomatic treatment may be either empiric or rational; the latter, of course, is the method of choice. Rational symptomatic treatment is only possible when, not merely the anatomic, but also the functional derangement in a given patient can be clearly visualized by means of knowledge gained from symptoms and physical signs, and from properly understood laboratory and functional tests, and when, from such a visualization, therapeutic measures of known effect are employed to meet truly existing indications.

To apply such an ideal to the treatment of pneumonia it becomes necessary first to analyze the functional difficulties with which the pneumonia patient is confronted.

The outstanding difficulty is the respiratory battle. Even in the absence of specific remedies, it seems likely that a considerable number of persons who now succumb to pneumonia could be saved were this respiratory burden taken from them. The ability to overcome toxemia and to repel bacterial invasion is undoubtedly reduced by exhaustion. The majority of pneumonia patients recover, as it is. It would therefore seem reasonable to suppose that, were the respiratory load lightened and exhaustion from respiratory effort prevented or decreased, the mortality could be reduced to a very low rate indeed. Given half a chance, the pneumonia patient will of himself survive his toxemia and master his infection. It will be our effort to show that there are methods at hand which it may be hoped will give him the half chance by removing or diminishing his respiratory burden.

Difficult breathing or dyspnea of a more or less typical type is the prime subjective and objective respiratory manifestation of pneumonia. Let us consider, therefore, the manner of its causation. It has long been known to be at least not solely explainable on the basis of morbid anatomy. The extent of the pulmonary consolidation bears no constant relationship to the intensity of the dyspnea; and, furthermore, dyspnea may cease when the crisis is past with no alteration in the anatomic process in the lungs. We must seek, then, a physiologic as well as an anatomic explanation.

Dyspnea occurs in normal persons under certain circumstances, after violent exertion, for example, or when the oxygen in the inspired air is greatly reduced as at high altitudes. It must be borne in mind that the term dyspnea should be restricted to difficult or distressful breathing. It is essentially a subjective phenomenon, though usually in addition it is possible to tell objectively when the breathing has become distressful. Increased breathing to which the term hyperpnea is properly applied is not necessarily distressful. One may have hyperpnea with no dyspnea. Hyperpnea is a condition in which the total volume of air entering the lungs per unit of time is increased over normal, when in other words, the ventilation of the lungs is increased. Increased ventilation of the lungs may be accomplished by an increase in rate or in depth of respiration or, more commonly, by an increase in both. An increase in rate of breathing only is not necessarily an indication of hyperpnea. Types of rapid shallow breathing occur in which there is no increase in the ventilation of the lungs, at least not in alveolar ventilation. To such the term tachypnea may well be applied. Tachypnea would be the respiratory homologue of tachycardia and may, as in some tachycardias, be due to purely reflex or nervous causes. The work of Peabody and his collaborators [1] and also that of Meakins [2] has thrown considerable light on the nature of these several respiratory types.

FACTORS THAT MAY CAUSE DYSPNEA

With these definitions in mind, we are in a position to discuss the factors which may cause dyspnea. In the first place, in normal individuals we have a great

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1. Peabody, F. W., et al.: Clinical Studies on the Respiration, I, III and IV, Arch. Int. Med. **16**: 846 (Nov.) 1915; **20**: 433, 443 (Sept.) 1917.
2. Meakins, J. C.: Harmful Effects of Shallow Breathing, with Special Reference to Pneumonia, Arch. Int. Med. **25**: 1 (Jan.) 1920.

variation in the amount of exertion necessary to produce dyspnea. The trained athlete may perform, with no subjective breathlessness, an amount of work which would produce extreme dyspnea in an untrained but otherwise normal person, and an individual with the so-called effort syndrome may have dyspnea on very trivial exertion. What are the reasons for these differences, and what, in fact, is the essential cause of dyspnea?

We think that in general it can be laid down as axiomatic that in any individual, normal or diseased, the symptom dyspnea will arise whenever the pulmonary ventilation called for by his life processes at the moment exceeds the quantity of air that his pulmonary bellows is mechanically capable of delivering with ease. If this principle is sound, the onset of dyspnea in persons, either normal or abnormal, will depend on the ratio between the ventilation called for by bodily needs and the ventilation that their bellows can deliver. It is really a case of demand and supply. In the case of the athlete doing increasing amounts of work, the demand, that is to say, the call for pulmonary ventilation, is essentially the same as in the untrained subject, but the supply, that is to say the ventilating power of his pulmonary bellows, is greater. The result is that the athlete gets dyspneic less readily. The reverse holds in the man with effort syndrome. His supply is lower than normal; he gets dyspneic sooner. The difference in the ventilating power of the lungs in different individuals is largely dependent on their vital capacity. The tidal air can obviously never exceed the vital capacity; as a matter of fact, it never reaches it. To make each individual respiration maximal would be a fatiguing and uneconomical way of producing ventilation. A high rate could not be maintained under these circumstances, as it takes time and effort to make a maximal respiration. The ventilating capacity will also be affected by certain other factors. The demand for ventilation on the part of the body is for a certain alveolar ventilation, that is to say, for a certain amount of air actually to enter the lung alveoli. The supply of ventilation, that it to say, the amount the bellows can deliver, must be thought of in terms of total ventilation. If the dead air space is increased, a larger total will be necessary to accomplish a given alveolar ventilation. Also rapid shallow types of breathing will require a greater total for a given alveolar ventilation than will slow deep types. The rapid shallow type is, in other words, an uneconomical type. These types have been discussed by Edsall,[3] and their significance in determining the relationship between ventilation demand and supply must be borne in mind.

During progressively increasing muscular work there is in normal subjects, as has been shown by Boothby [4] and by Means and Newburgh, [5] a progressive and essentially parallel increase in pulmonary ventilation, gas exchange and blood flow. In the course of this progression, dyspnea arises when ventilation reaches a point that throws a strain on the ventilating capacity of the lungs, and inability further to increase the work will be encountered when the subject reaches the greatest ventilation or circulation rate of which he is capable. The total ventilation of well developed normal men may be increased to as much as eight or nine times the resting value. The upper limit, as shown by Peabody,[6] will be greater, the greater the vital capacity. The increase in total ventilation is met, as has been said, by an increase in both rate and depth of breathing, but the increase in depth rarely exceeds a third of the vital capacity under any circumstances.[7] In producing large ventilation, therefore, the person with a small vital capacity will be at a disadvantage.[8]

Let us now apply these principles to pneumonia. We must again consider the demand for, and the supply of, pulmonary ventilation. In the normal person the demand is governed essentially by the gas exchange, that is to say, by the metabolism. Thus, as we have said, with increasing muscular work the gas exchange and ventilation increase in essentially direct proportion. In this case it is the metabolism which is cause and the ventilation which is effect. The respiratory center wishes to maintain a constant alveolar carbon dioxid tension. To do this, it can easily be seen, ventilation must increase in like proportion to carbon dioxid output. If it did not, alveolar carbon dioxid tension would be altered.

In a disease such as pneumonia, the metabolism will, as in the normal, be one of the factors determining the volume of the pulmonary ventilation; an increase in metabolism due to the disease will call for an increase in ventilation exactly as the elevated metabolism of muscular work did in the normal person. There are recognized in disease causes for increased metabolism which are quite apart from bodily activity. Fever is one of them. An increased level of the metabolism has been shown to exist by Du Bois and his collaborators in the fevers of typhoid,[9] malaria,[10] and sometimes in tuberculosis.[11] The typhoid patient at the height of his disease may have an increase of from 40 to 50 per cent. in his metabolism resulting from his fever alone and not due to muscular activity. It is altogether probable that a similar increase occurs in the fever of pneumonia. The metabolism, then, of the pneumonia patient may be expected to be higher, even while he is at complete rest, than it would be under the same conditions when he was well. He will, in other words, have a metabolic need for increased breathing or hyperpnea.

The metabolic, however, is not necessarily the only factor calling for hyperpnea. Another possible one is acidosis. If blood alkali is used up by combination with acid, in order to preserve blood reaction at its normal point the carbon dioxid tension of the blood must be reduced. This can only be accomplished by reducing the alveolar carbon dioxid tension through increased pulmonary ventilation. In general terms it may be said that to lower the alveolar carbon dioxid tension to half its original level the ventilation must be

3. Edsall, D. L.: Clinical Study of Respiration, Boston M. & S. J. **167**: 639, 1912.

4. Boothby, W. M.: Determination of the Circulation Rate in Man at Rest and at Work, Am. J. Physiol. **37**: 383, 1915.

5. Means, J. H., and Newburgh, L. H.: Effect of Caffein on Blood Flow in Normal Human Subjects, J. Pharmacol. & Exper. Therap. **7**: 449, 1915.

6. Peabody, F. W.: Vital Capacity of Lungs and Its Relation to Dyspnea, Arch. Int. Med. **20**: 443 (Sept.) 1917.

7. Grabfield, G. P., and Means, J. H.: Effect of Caffein on the Reaction to CO_2 of the Normal Human Respiratory Mechanism, J. Pharmacol. & Exper. Therap. **10**: 159 (Sept.) 1917.

8. Means, J. H., and Balboni, G. M.: Various Factors of Respiration in Persons with Pneumothorax, J. Exper. Med. **24**: 671 (Dec.) 1916.

9. Coleman, Warren, and Du Bois, E. F.: Clinical Calorimetry, VII, Arch. Int. Med. **15**: 887 (May) 1915.

10. Barr, D. P., and Du Bois, E. F.: Clinical Calorimetry, XXVIII, Arch. Int. Med. **21**: 627 (May) 1918.

11. McCann, W. S., and Barr, D. P.: Clinical Calorimetry, XXIX, Arch. Int. Med. **26**: 663 (Dec.) 1920.

doubled.[12] The presence or absence of acidosis can best be determined by constructing the so-called carbon dioxid diagram of the blood.[12] To do this, one determines and plots the carbon dioxid dissociation curve. The blood is equilibrated with three atmospheres, each having a different and known tension of carbon dioxid but the same tension of oxygen. The carbon dioxid content of the equilibrated blood is determined by blood gas analysis. The three points obtained are plotted and a curve drawn through them as in Chart 1, the contents (expressed in per cent. by volume) being the ordinates and the tensions (expressed in millimeters of mercury) the abscissas. Now the reaction of the blood, Henderson [13] has shown, depends chiefly on the ratio between the concentration of free carbonic acid and of bicarbonates, thus $[H^+]=K\frac{[H_2CO_3]}{[BHCO_3]}$ in which $[H^+]$ is the hydrogen ion concentration (and hence the reaction) of the blood, $[H_2CO_3]$ the concentration of carbonic acid and $[BHCO_3]$ that of bicarbonates in the blood and K a constant. The reaction of the blood at any point in our dissociation curve can be derived, therefore, from its ordinate and abscissa, for the ordinate, or carbon dioxid content, is proportional to bicarbonate concentration, while the abscissa, or tension, is equivalent to the concentration of free carbonic acid, for gases go into physical solution in direct proportion to their tensions.

This being true, in the diagram any diagonal line drawn through the point 0 will represent a certain hydrogen ion concentration, or blood reaction, for the ratio of ordinate to abscissa for any point in such a diagonal will be the same. By the formula of Haggard and Henderson, Peters, Barr and Rule [14] have constructed such diagonals for different blood reactions. They are shown in Chart 1. The logarithmic expression of hydrogen ion concentration, the so-called p_H, is usually employed.

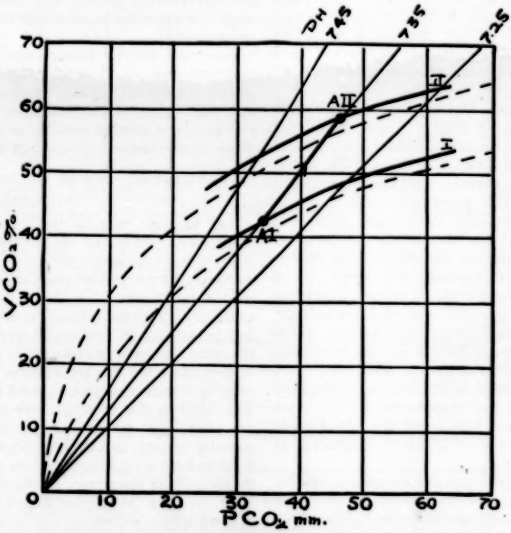

Chart 1.—Diagram showing that in a pneumonia patient with a dissociation curve at a normal level (Curve I), that is to say, falling within the normal zone (indicated by interrupted line) and a normal p_H of 7.35 as shown by the position of the arterial point AI, the effect of raising the curve to the position of Curve II, by the administration of bicarbonate, would be to decrease the volume of pulmonary ventilation necessary; for, with the arterial point in the position AII, the carbon dioxid tension of the arterial blood will be 46.5 mm. When it was in the position AI, however, it had to be kept down to 34.0 mm. With an unchanged carbon dioxid output, considerably less ventilation will be needed to keep the arterial carbon dioxid tension at 46.5 mm. than at 34.0 mm. The effect of alkali then would be to diminish the task of the pulmonary bellows. This chart and Chart 2 are hypothetic but are in many respects similar to actual curves that we shall report later. V CO_2, carbon dioxid content of blood in percentage by volume; P CO_2, carbon dioxid pressure of blood in millimeters of mercury.

Having plotted the dissociation curve of a given blood, one can then obtain samples of blood directly from an artery or vein and determine their carbon dioxid content by analysis, and then plot these on the previously plotted curve. These are called the arterial or A point and the venous or V point. From the position of these points, the reaction of the blood can be read off on the diagnonals.

We have to date constructed twenty carbon dioxid diagrams for the bloods of thirteen patients with pneumonia. Three of these were shown to this society a year ago.[15] The rest have been determined since then. We also have to date a series of some eighteen diagrams of controls of various sorts. It was pointed out in the previous communication that acidosis in the sense of an abnormal amount of nonvolatile acid in the blood is shown by the level of the dissociation curve. A low curve means that a portion of the blood alkali is used up. The presence of abnormal acid is usually cared for and compensated for by reduction of carbonic acid through hyperpnea. When this compensation is sufficient, even though the dissociation curve is low, the A and V points will fall on the diagonal of normal p_H (which is 7.35). When compensation has not been adequate, there is a shift in blood reaction and this will be shown by a position of the A point or V point to the right of the p_H 7.35 line which is in the direction of acidity.[16]

In the previous paper [15] there was shown a zone within which it was expected normal curves should fall. The majority of our curves for pneumonia patients fall within this. A few fall slightly below it. For this reason we believe that often there is no nonvolatile acidosis in pneumonia, or that when present, it is of slight grade.[17]

When we come to the p_H of the blood in pneumonia we find that certain cases show a reaction less alkaline than normal, even though the dissociation

12. Haggard, H. W., and Henderson, Yandell: Hematorespiratory Functions, J. Biol. Chem. 39: 163 (Aug.) 1919.

13. Henderson, L. J.: Das Gleichgewicht zwischen Basen und Säuren im tierischen Organisums, Ergebn. Physiol. 8: 254, 1909.

14. Peters, J. P., Jr.; Barr, D. P., and Rule, F. D.: CO_2 Absorption Curve and CO_2 Tension of the Blood of Normal Resting Individuals, J. Biol. Chem. 46: 489 (Feb.) 1921.

15. Means, J. H.; Bock, A. V., and Woodwell, M. N.: Studies of the Acid-Base Equilibrium in Disease from the Point of View of Blood Gases, J. Exper. Med. 33: 201 (Feb.) 1921.

16. The p_H falls as a solution becomes less alkaline or more acid.

17. These curves will be published in full and discussed in detail in the near future by Means, Barach and Woodwell.

curve is at a normal level. This to our minds suggests a retention of carbon dioxid, giving rise to what may be called a carbonic acidosis. In normal persons the alveolar air and arterial blood are essentially in tension equilibrium. This, as Peters has shown, is not necessarily true in disease.[18] In pneumonia or in heart disease it may often happen that all the blood does not get properly aerated as it passes through the lungs. This may be because of consolidation, of edema, or of exudate, or foam in the air passages, as suggested by Hoover.[19] Under such circumstances the blood leaving the lungs will be a mixture of aerated and unaerated blood. Furthermore, the carbon dioxid tension of the blood will be higher than that of the alveolar air. If in a portion of the lungs a proper gas exchange cannot take place, in order to maintain blood carbon dioxid tension at a normal level, the normal portion of the lungs must be overventilated. Impairment, then, in the respiratory function of any portion of the lungs, if it leads to a mixture of aerated and unaerated blood, will be a factor demanding hyperpnea. It may well exist in pneumonia.[20]

A third possible cause for hyperpnea, which has recently been suggested by Pearce [21] and which may at times be present in pneumonia, is an insufficient circulation rate or blood flow. We pointed out before that, as metabolism increases, ventilation and blood flow must increase in like proportion. To a certain extent, however, as Pearce shows, an insufficient response on the part of the circulation can be offset by an increased response on the part of the ventilation—superventilation, as he calls it. From this it would follow that in an individual whose circulation rate did not increase parallel with his metabolism, dyspnea would occur at an earlier point because of the superventilation which compensates for the insufficient blood flow. In a pneumonia patient with poor heart action and insufficient blood flow, then, we might have a need for hyperpnea from circulatory causes. As a matter of fact, our own studies of the blood gases in pneumonia rarely show evidence of stagnation of blood flow.

A fourth cause for hyperpnea is anoxemia, or deficient oxygen saturation of the blood as it passes through the lungs. Such a condition is frequently found in pneumonia and may result from the admixture of aerated and unaerated blood or from an imperfect aeration of the entire blood mass as it passes through the lungs. The former might result from consolidation or localized edema, the latter from generalized edema or from the presence of exudate or foam in the air passages. How anoxemia causes hyperpnea is a disputed matter, and for the purpose of the present analysis it is not necessary that we go into it.

There are one or two other factors which might play a part in the determination of the required ventilation in pneumonia. For one thing, there is the matter of the dead air space in breathing. In the normal person, alveolar and total ventilation run roughly parallel, for ventilation increase is met by increase in both rate and depth. It can be seen, however, as we have said earlier, that unless there was a compensatory change in the size of the dead space, with a rapid shallow type of breathing, it would take a relatively greater total ventilation to secure a given alveolar ventilation than with a slow deep type. The rapid shallow type is, as has been pointed out, a less economical type; a greater total effort is required to secure a given result.

An enlargement in the dead space would also require a greater total ventilation to secure a given alveolar ventilation. Such an enlargement occurs in emphysema, as has been shown by Hoover.[22] So far as we know, it has not been studied in pneumonia. In the emphysematous patient with pneumonia, however, it might be expected to be still another factor demanding hyperpnea.

So much for the factors which may play a part in determination of the pulmonary ventilation required of the pneumonia patient. Any or all of them, if present, will exert their influence in the direction of demanding a greater ventilation than the person would have under normal circumstances.

VENTILATORY POWERS OF THE PNEUMONIA PATIENT

Let us now turn to the matter of supply, to the ventilatory powers of the pneumonia patient in contrast to his ventilatory needs. This, in the last analysis, boils down to the vital capacity, and to the type of his breathing. The lower the vital capacity, the more will a patient have to increase his ventilation by an increase in rate at the expense of depth. That the vital capacity is reduced in pneumonia is certain. A few observations that we have made show that there may be a reduction to one third or less of the normal. This may be due to actual obliteration of air space by the pathologic process, or it may be due to inability to take a deep breath because of pleural pain or to interference with proper action of the diaphragm due to abdominal distention. Whatever the cause, it will have the effect of necessitating a rapid shallow type of breathing.

In regard to such a type of breathing, it has been shown by Meakins [3] actually to exist in pneumonia, and it has been shown by Haldane, Meakins and Priestley [23] to be of itself capable of producing anoxemia. This, they think, is due to an incomplete expansion of the lung in very shallow breathing and the admixture of poorly aerated blood from poorly ventilated portions with properly aerated blood from properly ventilated portions of the lung.

To summarize the morbid physiology of pneumonia, then, we may say that the pneumonia patient may be called upon to ventilate his lungs more than he would under normal circumstances for any or all of the following causes: (1) increased metabolism due to fever; (2) acidosis; (3) deficient circulation rate or blood flow, and (4) anoxemia. His demand for ventilation, in other words, is increased. Now at the same time his

18. Peters, J. P., Jr., and Barr, D. P.: CO, Absorption Curve and CO, Tension of the Blood in Cardiac Dyspnoea, J. Biol. Chem. 45: 537 (Feb.) 1921.

19. Hoover, C. F.: Moisture in the Air Spaces of the Lungs and Oxygen Therapy, J. A. M. A. 71: 880 (Sept. 14) 1918.

20. In the matter of the *pH* of the blood, the normal can be taken as 7.35. How much variation there is in health is unknown. Several of our cases show *pH*'s of 7.25 or less, which we believe is lower than the normal range of variation. Our figures have all been corrected for oxygen unsaturation by Peter's[24] formula.

21. Pearce, R. G.: The Cardiorespiratory Mechanism in Health and Disease, Arch. Int. Med. 27: 139 (Feb.) 1921.

22. Hoover, C. F.: Alveolar Air and Minute Volume of Air in Pulmonary Emphysema, Tr. Assn. Am. Phys. 27: 572, 1912.

23. Haldane, J. S.; Meakins, J., and Priestley, J. G.: Harmful Effects of Shallow Breathing, J. Physiol. 52: 433 (May) 1919.

available supply of ventilation dependent on his vital capacity may be markedly decreased. His respiratory mechanism is confronted simultaneously with more work to do and a lessened ability for doing it. Not only that, but because of the low vital capacity, he is obliged to meet his demand for increased ventilation by adopting a rapid shallow type of breathing which of itself introduces two vicious circles, the first that, being an uneconomical type of breathing, it still further increases the necessary total ventilation; and the second, that this type has been shown to increase the degree of anoxemia. It would seem that we need look no further for an explanation of the dyspnea. Moreover, the multiplicity of the factors involved and the fact that various combinations of them may serve to use up all respiratory reserve will show why such clinical phenomena as dyspnea and cyanosis bear no definite relation to the extent of the anatomic process in the lungs.

TREATMENT

With this analysis of the morbid physiology in mind, let us try to deduct the logical indications for symptomatic treatment in pneumonia. The possible lines to pursue would seem to be (1) procedures which diminish the need for ventilation, and (2) procedures which increase the vital capacity — in other words, measures which will either decrease demand or increase supply of ventilation.

As to the first, we have several methods of attack. The metabolism we probably could alter only by altering the temperature. Hyperpyrexia we do try to relieve, but it is not felt wise nowadays to interfere with temperature unless excessive. At the crisis, nature restores temperature to its normal level. The metabolism probably falls with it, and, as is well known, dyspnea often ceases with no discoverable change in the extent of the anatomic lesion. This may well be explained by a suddenly decreased demand for ventilation.

Deficient blood flow we may attempt to prevent or relieve by suitable cardiac stimulation.

In the matter of increasing vital capacity and so increasing the efficiency of the pulmonary bellows, there probably are no direct measures that can be used except when the low capacity is due to pleural pain, in which case morphin may accomplish it; or, when it is due to abdominal distention, when relief of that condition may improve it.

There are, however, two procedures which meet direct indications which we wish particularly to discuss; both are of the type which may be expected to diminish the need for ventilation. One is the administration of alkali; the other, the therapeutic administration of oxygen.

In regard to alkali, we have found, as has been stated earlier, that the carbon dioxid dissociation curve is either at a normal or a slightly subnormal level. This means that there is either a normal or slightly reduced amount of available alkali in the blood. Our findings in this respect are in agreement with those of Palmer.[24] This writer, however, has found that there is a considerable quantity of organic acid eliminated in the urine of pneumonia patients. It has also been found by Palmer [25] and others that it takes more alkali by mouth to render the urine alkaline in pneumonia than in the normal person. In considering the preservation of acid-base equilibrium in disease, we must bear in mind that there are two principal compensatory mechanisms, the pulmonary and the renal. The level of the dissociation curve indicates that the renal compensation is either not at all or only slightly disturbed. The organic acid found in the urine by Palmer must be eliminated by the kidney nearly as fast as produced, for did it accumulate in the blood the dissociation curve would be definitely lowered. The pulmonary response is generally adequate also, as shown by the normal p_H of the blood, although, as we have said before, in certain cases there is apparently a shift in reaction in the acid direction with a curve at a normal level, which we might interpret as carbonic acidosis due to insufficient pulmonary compensation, resulting perhaps from depression of the respiratory center as found in experimental pneumonia by Newburgh, Means and Porter. [26]

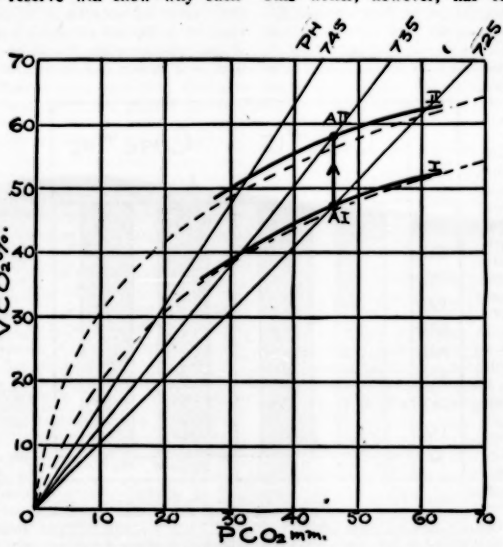

Chart 2.—Diagram showing that in a pneumonia patient with a p_H shifted in the acid direction as shown by the position of the arterial point at AI on the p_H 7.25 diagonal, the effect of raising the curve from the position I to II will be to convert an insufficient ventilatory response into a sufficient one. The same pulmonary ventilation will be needed to keep the arterial point in the position AII when the curve is in the position II, as was required to keep it at AI when the curve was in the position I. But in the position I the p_H is 7.25, which is acidotic, while in the position II it is 7.35, or normal. The effect of alkali has been to restore pulmonary compensation with no added effort on the part of the ventilatory mechanism. Elevation in the curve by alkali of the order of magnitude shown in this and in Chart 1 has been found quite easy of accomplishment.

24. Palmer, W. W.: Acidosis and Acid Excretion in Pneumonia, J. Exper. Med. **20**: 495 (Oct.) 1917.
25. Palmer, W. W., and Henderson, L. J.: Clinical Studies of Acid-Base Equilibrium and Nature of Acidosis, Arch. Int. Med. **12**: 153 (Aug.) 1913.
26. Newburgh, L. H.; Means, J. H., and Porter, W. T.: Respiratory Mechanism in Pneumonia, J. Exper. Med. **24**: 583 (Nov.) 1916.

If there is either no reduction or only slight reduction in the bicarbonate content of the blood as shown by the level of the dissociation curve, why is it that the alkali tolerance is increased? This may be in part because, owing to a urinary acidity increased by the presence of organic acid, it actually takes more alkali to change the reaction of the urine itself, but in greater part it seems to us that it may be due to a retention of alkali as a compensatory measure on the part of the body.

As Henderson and Haggard have shown, to eliminate a given quantity of carbon dioxid per minute, less pulmonary ventilation will be required at a high level of blood bicarbonate than at a low one. That is to say, with a high dissociation curve, less ventilation will care for a given carbon dioxid output than with a low curve. A raising of the curve therefore enables the respiratory mechanism to perform a required task with less labor. Scott [27] has shown that patients with pulmonary emphysema do this very thing. They have a greatly reduced ventilating capacity; they compensate by raising their dissociation curve.

Now it occurs to us that the same sparing of the respiratory mechanism may occur in pneumonia as a result of giving sodium bicarbonate. When the curve is below the normal zone this, of course, will be beneficial; but even when it is at a normal level to start with, on giving alkali it goes to a higher level than normal. This in a patient with a normal p_H before alkali might, theoretically at least, reduce the amount of pulmonary ventilation that he would have to produce, and in one with a low p_H a raising of the curve might change an existing ventilation from an insufficient to a sufficient one. Some of our cases seem to show that, even without the therapeutic administration of alkali, nature attempts to raise the curve, for after the crisis it was at a considerably higher level than before. We have also found the curve can be readily raised 10 per cent. by volume or more by giving alkali.

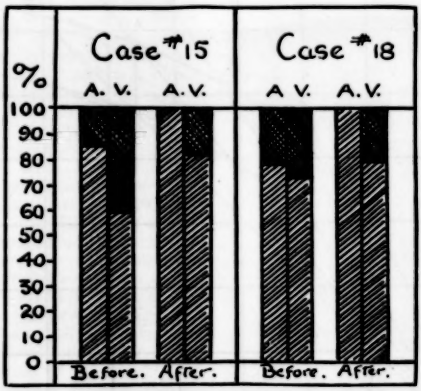

Chart 3.—Effect of oxygen therapy on the arterial and venous oxygen saturation in two cases of lobar pneumonia. *A*, arterial blood; *V*, venous blood. The height of the lightly shaded portion of the column indicates the percentage oxygen saturation of the given blood. The observations in Case 15 were just before and immediately after twenty minutes of oxygen therapy. It will be seen that a moderately severe arterial anoxemia was entirely abolished. The observations in Case 18 were before and after oxygen had been given intermittently for a total of thirteen out of twenty-four hours. Here a very severe arterial anoxemia was abolished.

Our conception, then, of the use of alkali in pneumonia is that it may be helpful by correcting a nonvolatile acidosis if that exists, and even if it does not, by decreasing the amount of ventilation necessary to accomplish the output of a given quantity of carbon dioxid; or, in cases which show a lowering of the p_H, by rendering an ineffective ventilation effective. These actions are shown hypothetically in Charts 1 and 2. In brief, alkali given therapeutically, we believe, may act as a conservator of respiratory effort. The actual effect of alkali has been studied in very few cases. The finding of the indication, however, we believe is definite, and the use of alkali worthy of further study. That it is desirable to diminish respiratory effort we believe is obvious; but pertinent in this regard are the findings of Newburgh, Means and Porter,[26] which showed that in experimental pneumonia as the disease advanced there was a progressive decrease in the sensitivity of the respiratory center ending finally in death from respiratory failure. It has also been shown more recently by Davies, Haldane and Priestley [28] that resistance to respiration in time fatigues the center. It is entirely conceivable that the abnormal respiratory load in patients with pneumonia has the same effect, and that removing or decreasing this load might greatly improve the chance of recovery. A word of warning, however, about the use of alkali is in order. It was shown in our previous paper,[15] and has been shown by others, that an alkalosis can be produced by overdosage with sodium bicarbonate. To our minds, following Palmer,[25] the reaction of the urine should be the guide. Enough bicarbonate should be given to make the urine alkaline; then it should be discontinued, to be recontinued later if the urine returns to an acid reaction. This method we believe safe. It is inconceivable that a dangerous state of alkalosis could develop while the urine remained acid, for the response to alkalosis by the body would be the elimination of base by the kidney.

The second therapeutic measure that we have studied in detail is the use of oxygen. Stadie [29] and Meakins [30] have both found that there often is an arterial or anoxic [31] anoxemia in pneumonia. We have had the same experience. In this clinic in the past year there have been treated by oxygen inhalation ten patients with lobar pneumonia and two with bronchopneumonia. All had arterial anoxemia in some stage of the disease, except one of the patients with bronchopneumonia. The arterial saturation in the majority of these was from 74 to 92 per cent.; the lowest observed was 62.3 per cent. Of the ten lobar pneumonia patients there were eight in whom blood gas determinations were made in relation to the oxygen therapy. The arterial saturation was materially raised in all but one by oxygen administration when a suitable

27. Scott, R. W.: Observations on the Pathologic Physiology of Chronic Pulmonary Emphysema, Arch. Int. Med. **26**: 544 (Nov.) 1920.

28. Davies, H. W.; Haldane, J. S., and Priestley, J. G.: The Response to Respiratory Resistance, J. Physiol. **53**: 60, 1920.

29. Stadie, W. C.: Oxygen of Arterial and Venous Blood in Pneumonia and Its Relation to Cyanosis, J. Exper. Med. **30**: 215 (Sept.) 1919.

30. Meakins, J.: Observations on the Gases in Human Arterial Blood in Certain Pathological Conditions and Their Treatment with Oxygen, J. Path. & Bacteriol. **24**: 79 (Jan.) 1921.

31. Barcroft, J.: Anoxemia, Lancet **2**: 485 (Sept. 4) 1920.

apparatus was employed. In four it was raised to the normal level. In the case of bronchopneumonia which showed arterial anoxemia the saturation also increased after oxygen.

Objectively, the effect of oxygen therapy was nearly always to lessen or abolish cyanosis, and also to slow very definitely the pulse rate anywhere from 5 to 20 beats. Subjectively, there sometimes was relief to respiratory distress and sometimes not.[32]

It seems to us that the presence of anoxemia constitutes a perfectly definite indication for treatment. Anoxemia is for one thing one of the possible causes of hyperpnea, and therefore its relief may be expected, to a certain extent, to reduce the respiratory burden; in addition it is the cause of a number of very unpleasant symptoms per se. Barcroft,[33] for example when in an anoxemic state produced in a chamber with rarefied air suffered from distressing headache, nausea, vomiting, faintness and visual disturbances. His degree of anoxemia was not as great as is often found in pneumonia. In severe anoxemia, profound damage may be done to the cardiovascular and central nervous systems. It would seem, then, that the relief of anoxemia might spare a patient from a multiplicity of injurious effects. The slowing of the pulse rate when anoxemia is relieved would indicate an improved heart action. It further has been shown by the work both of Meakins and of ourselves that anoxemia in pneumonia can usually be decreased or abolished by suitably conducted oxygen therapy.[30] The results in two of our treated cases are shown graphically in Chart 3. For the purpose, oxygen may often have to be given continuously or at frequently repeated intervals. Some of the more modern types of apparatus will have to be used, and in most instances a special nurse will be necessary to carry out the treatment.

SUMMARY

1. Rational symptomatic treatment must be based on a clear understanding not only of the morbid anatomy but also of the morbid physiology of the disease concerned.

2. In pneumonia, the outstanding feature is the respiratory battle. A great strain is thrown upon both respiratory and circulatory mechanisms.

3. The respiratory strain results from the circumstance that the pneumonia patient is simultaneously confronted with a necessity for a greater pulmonary ventilation than under normal circumstances, and a pulmonary bellows of reduced efficiency with which to accomplish it. He has a greater ventilatory demand and at the same time a decreased ventilatory supply.

4. A number of factors contribute to this vicious state of affairs. Increased metabolism, acidosis, deficient circulation, and anoxemia may increase the demand for ventilation. At the same time, decreased vital capacity due to consolidation, edema or pleural pain, or abdominal distention may decrease the capacity of the pulmonary bellows.

5. We can directly meet some of these indications. Acidosis, if present, we can correct by alkali administration. Alkali administration also may be hoped to help the nonacidotic case because it raises the bicarbonate level of the blood, which in turn makes it possible for the patient to get along with a reduced pulmonary ventilation.

6. Anoxemia, which is frequently present and which has a variety of injurious effects, may be corrected or relieved by oxygen administration.

7. Both these measures—alkali administration and oxygen administration—must be carefully and intelligently controlled. Bicarbonate should be given only in amounts sufficient to turn the urine alkaline to litmus. If pushed further than this, it may do harm by producing alkalosis. Oxygen should be given with one of the modern types of apparatus and often nearly continuously by a specially instructed nurse. Its continuation is to be governed by the effect on the cyanosis and the comfort of the patient.

8. These measures are supplementary to specific therapy. When used, however, they may be expected to spare the patient several avoidable burdens and leave him free to devote his entire energy to the fighting of his infection, thus, theoretically at least, improving his chance of recovery.

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32. The data on oxygen therapy will be published shortly in full by Barach and Woodwell in the Archives of Internal Medicine.

33. Barcroft, J.; Cooke, A.; Hartridge, H.; Parsons, T. R., and Parsons, W.: The Flow of Oxygen Through the Pulmonary Epithelium, J. Physiol. 53: 450 (May) 1920.

THE VALUE OF DRUGS IN OPHTHALMOLOGY*

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Previous speakers have given us the general principles of pharmacotherapy. Therefore, in discussing the use of drugs in eye affections it is the practical applications of those principles to individual remedies in ophthalmology that should be considered.

In discussing the use of drugs in the treatment of affections of the eyes, the great assistance of heat, cold, electricity, massage, roentgen ray, radium, organ therapy, the serums, surgery and, occasionally, even bleeding, must be borne in mind. Space does not allow even the mention of all the drugs that are useful in ophthalmology, so that I will discuss principally those remedies which have in my own experience proved valuable.

The late Dr. Reber very truly noted the fact that the laboratory tests for the efficiency of drugs vary so much in their biologic surroundings from the clinical tests that exact coincidence cannot be expected. He said:

> And if perchance there should be a conflict in testimony between the test tube in the laboratory and the results of carefully conducted therapeutic tests in the consulting room or clinic, my voice would be raised in favor of the latter until such a time as the results can be harmonized.

DRUGS ADMINISTERED INTERNALLY FOR EYE AFFECTIONS

Salicylates.—These are of proved value in certain inflammations of the uveal tract, especially in sympathetic ophthalmia. They lessen pain, promote rest and sleep, and directly affect the local inflammatory process.

Sodium salicylate is the best of these representatives of the virtues of salicylic acid. In sympathetic ophthalmia, best results have been obtained by very large doses.

Acetylsalicylic acid ("aspirin") is less disturbing to the digestion, and at the same time it is more prompt in

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its analgesic effect. In inflammatory conditions and discomfort following eye operations, 10 grains of acetylsalicylic acid given at bedtime will often assure a good night's rest and help to hasten recovery. This means a great deal when restlessness or anxiety is a real handicap to convalescence.

Iodids.—Potassium iodid and sodium iodid were the sheet anchors of our ophthalmologic fathers. While they do not destroy the spirochetes in syphilitic conditions, they do cause the formation of a proteolytic ferment that has a distinctly selective action on the cellular elements of new tissue growths, or on inflammatory exudates. They therefore deserve to hold their place in present day therapeutics in both syphilitic and nonsyphilitic eye affections. In interstitial keratitis associated with congenital syphilis, the iodids have proved themselves of real value. This is also true in extensive choroidal lesions with vitreous opacities, irrespective of the cause. In gumma of the iris or ciliary body, I have observed the growth to disappear very rapidly under the internal administration of rapidly increasing doses of potassium iodid. Its effect on the formation of new cell growth is well illustrated in melanosarcoma of the choroid when unintelligent patients have for a time refused enucleation of the eye. In such cases I have seen the tumor grow less and the sight improve. Unfortunately, the tumors have shown a fulminating growth with the cessation of the iodids. Owing to the effect of the iodids on exudates in the interior of the blood vessels, they are of value in arteriosclerotic processes involving the choroid, retina and optic nerve. In older people, when the drug has been given over a long period of time, sodium iodid and strontium possess advantages.

Syrup of ferrous iodid is of much value in many ocular conditions, especially those occurring in cases with poor nutrition. In writing about this medicine, Dr. Reber said: "In the interstitial keratitis of children, it is almost a panacea."

Bromids.—The bromids of sodium or potassium assist ophthalmic surgery by their sedative action on the nervous system, the depressing effect on the motor area of the cortex, and by allaying reflex excitability. In nervous people with poor control, the use before an operation of bromid in addition to the application of local anesthetics will prevent the danger of "squeezing," and will assist the patient in maintaining the necessary quiet after the operation.

Nitrites.—The action of sodium nitrite is similar to that of the other members of the nitrite group in producing vasodilatation and reducing blood pressure. It is useful in retinal hemorrhages in older people when there is high blood pressure.

Amyl nitrite by inhalation is helpful in making a diagnosis in cases of toxic amblyopia. It also has a therapeutic value in the later stages of those cases in which there is a paleness of the temporal portion of the nerve.

Nitroglycerin has been used in cases of embolism of the central retinal artery. But my experience with this and other drugs in such cases has not been satisfactory.

Calcium Salts.—Calcium lactate seems to possess a definite value when given in the dose of 5 grains three times a day for several days preceding an operation on the iris or muscles whenever the patient's coagulation time is markedly slow. In those cases in which there are recurrent hemorrhages of the retina, it is a valuable addition to the other appropriate remedies.

Barbital ("veronal").—This is usually very effective in producing sleep after operation, but sometimes produces great excitement instead. To use a patient's expression, "It set me nearly crazy." Its use, therefore, in ophthalmic surgery is not without some danger.

Cathartics.—Properly employed, these are of much value in ophthalmic practice. Of these, cascara sagrada is especially valuable on account of its effect on the colon.

Cinchophen ("atophan").—This possesses the power of hastening the elimination of uric acid and the urates. In cases of increased blood-uric acid and a general so-called gouty tendency, cinchophen administered in 5 grain doses three times a day, before an intra-ocular operation, tends to diminish the danger of a postoperative iritis or iridocyclitis. It is very effective if given later in these cases when these conditions actually arise after an operation.

In hysterical patients, when the hysterical condition is complicating recovery, asafetida or valerian will have a quieting and, therefore, beneficial effect. I am not prepared to say whether the effect produced is carminative, or whether it is purely mental from the evil odor and taste.

Hydrochloric Acid, Dilute.—This is valuable when there are vitreous opacities without any visible fundus lesion, and which seem to be connected with a gastrointestinal toxemia. Its stimulating effect on the stomach secretions, and its antiseptic effect on the intestinal tract, have been frequently mentioned.

Strychnin.—The salts of strychnin can be used to advantage in cases of paresis of ocular muscles (including that of accommodation after diphtheria). They are also useful in cases of partial optic atrophy, in the later stages of toxic amblyopia, and in weakness of accommodation and convergence in neurasthenic conditions. It is well to remember the cumulative effect pointed out by Hare and others. It is best given hypodermically, and has to be pushed until toxic effects are shown in order to get the best results.

Hexamethylenamin.—This product of ammonia and formaldehyd is often useful to the ophthalmic patient after operations whenever bladder complications cause much trouble and restlessness from constant desire to pass the urine.

Opium.—Morphin sulphate has an analgesic, relaxing and depressing effect on the whole central nervous system. It is very valuable before operations on very nervous and pain-sensitive persons. It relieves the dread and the nervous shock of the operation, enables the patient to hold still without "squeezing," and enhances the effect of the local anesthetic. Before cataract extractions, it can be given in combination with atropin; in glaucoma, in conjunction with strychnin. It should, however, never be given before an operation unless the effects on that individual patient have been ascertained beforehand, because in some people morphin causes great cerebral excitement, nausea and vomiting.

Codein is not as subject to individual idiosyncrasies as morphin, so that it can often be substituted with advantage for morphin. It is an effective reducer of pain, a good hypnotic and sedative. It is very useful in reducing cough or pain in operative cases.

Arsenic.—Liquor potassii arsenitis (Fowler's solution) is very useful in some cases of clonic blepharospasm and also in later stages of malarial keratitis.

Arsphenamin.—Given intravenously, this has proved of great value in all stages of syphilitic eye lesions. Just as in cases of syphilitic manifestations in other parts of the body, so in the later phases of the disease in the eye, it is well to associate arsphenamin with mercurials. My experience with intraspinal medication in syphilitic optic nerve lesions has not been very extensive. But so far, I have seen personally only one case in which the sight suddenly lessened after the first injection. Several cases have been seen in which the atrophic condition was helped and the improvement has been maintained. Other cases have been seen in which the optic atrophy continued its usual sad course, uninfluenced by the injections.

Neo-arsphenamin has not shown any great advantage over the first named arsenic preparation.

Mercurials.—In spite of the introduction of arsphenamin and other arsenic preparations, mercury still has a place in modern ophthalmologic therapeutics. Dr. Reber speaks of calomel as "that gift of the gods." In addition to its general effects, it is very valuable in all inflammatory eye conditions, in unloading the intestinal tract of toxic material. Even people who are much annoyed by "muscae" affirm that the specks are much less troublesome "after a good cleaning out with calomel." In syphilitic conditions, the internal, the intramuscular injection, and the epidermal administration of mercurial preparations are very valuable. In ocular manifestations of congenital syphilis in children, it is of great value given as suggested by Fordyce and Rosen. The administration of mercuric chlorid in conjunction with injections of neo-arsphenamin has been very effective.

Pilocarpin.—The general effect of pilocarpin by mouth and by hypodermic application have been so often described that it is not necessary to add anything more than the statement that I still have faith in its virtue when properly applied in selected cases of uveal inflammation and inflammation of other ocular tissues.

LOCAL ANESTHETICS OR ANALGESICS

One of the great epochs in ophthalmology opened in 1884 when Karl Koller discovered the anesthetic properties of cocain, for it was through his powers of observation that this precious boon was given to suffering humanity. Surgeons and patients the world over should rise up to call his name blessed.

Cocain hydrochlorid, owing to its free solubility, has been the form in which cocain has been generally used. This salt—the oldest of the family of local anesthetics—though supplanted by many synthetic products, under some conditions, still has a niche which it fills effectively. In addition to holocain for ocular operations, with atropin in certain severe inflammations of the uveal tract, and with miotics in painful cases of absolute glaucoma, cocain has no rival. But on account of its instability, toxicity, dilating effect on the pupils, drying effect on the corneal epithelium, and its danger of causing glaucoma, it is best supplanted in certain cases by some of the newer products of synthetic chemistry.

The principal synthetic products are beta-eucain, holocain hydrochlorid, stovain, alypin and procain.

Holocain is used chiefly because of its antiseptic properties, absence of effect on the pupils and corneal epithelium, and lesser toxicity. For use in office work for removal of foreign bodies on the cornea, etc., its advantages are obvious. Its sterilizing and stimulating effect on corneal ulcers makes it doubly valuable. In major operations I have instilled in the patient's eye a 1 per cent. solution of fresh holocain hydrochlorid every five minutes for twenty minutes before the patient comes to the operating room.

The subconjunctival injection of a 0.5 per cent. solution of procain with epinephrin in addition to the local instillation has been very efficacious in intra-ocular operations. Generally the injections are given below; but in sclerocorneal trephining, in muscle operations, and in some cases of iridectomy, the injections are made at the site of the operation. Even in cases of glaucoma, epinephrin is added to the procain. In glaucoma cases that are suitable, a hypodermic of morphin with strychnin is also given twenty minutes before the operation.

Ethylmorphin hydrochlorid ("dionin") acts as an analgesic and as a local vasodilator. I use it for its absorbent effect in postinflammatory and postoperative conditions. In corneal scars, uveal exudates and vitreous opacities it seems to assist Nature in bringing about absorption. It is well to remember the varying individual sensitiveness to this drug. Some persons stand an initial strength of 1 per cent., while others experience great discomfort from one-fifth that strength. The patient should be informed beforehand of the local effects it is likely to produce, especially the reflex sneezing. I use at bedtime the weakest solution possible to obtain the vasodilatory effect.

CYCLOPLEGICS AND MYDRIATICS

Atropin is the historical progenitor of this group of drugs. Murray quotes Fukala as stating that belladonna was first introduced between 500 B. C. and 130 A. D. Owing to Galen's disfavor, its use was abandoned for many centuries.

The great value of atropin sulphate in ophthalmic therapeutics is too well recognized to require mention. Without it (or some of its substitutes) the present day ophthalmologists would indeed be lost. However, it is a potent drug and should at all times be used with care. In all elderly people, or in young people with a glaucomatous tendency, its use should be confined to those cases in which no substitute would answer the purpose. In all cases in which cycloplegics are used for purposes of refraction or ophthalmoscopic examination, a 1 per cent. solution of pilocarpin should follow the completion of the test. Children are especially sensitive to atropin, and there are few of us who have not seen the flushed face, dry mouth, bright eyes, rapid pulse and respiration, and great excitability following its use. Some very asthenic persons exhibit a marked idiosyncrasy for it. I have seen mydriasis and partial paralysis of accommodation lasting several days from a belladonna plaster placed on the back. It is also felt that the long continued use of cathartics containing belladonna, in the cases of elderly people, may in a few instances play a contributing part in the causation of chronic glaucoma. Locally, at times, it causes a conjunctival irritation resembling trachoma. Even a local dermatitis follows its use. This disturbance disappears quickly after the atropin is discontinued, and the appropriate remedies used. Owing to its toxic action, many substitutes are used in ophthalmic practice, though in inflammatory lesions of the uveal tract it still holds first place.

When the patient exhibits an idiosyncrasy for atropin, I have found for therapeutic purposes that scopolamin hydrobromid is the best substitute. This is especially true in operative cases for glaucoma, and in those cases in elderly people when atropin has an exciting action. It has less tendency to cause local irritation, or to increase tension, and acts as a cerebral sedative. However, it must not be used in strong solution, for some people are easily affected by it. For purposes of testing the static refraction in cases in which atropin is not advisable, I prefer a 1 per cent. solution of homatropin hydrobromid to which one drop of a 4 per cent. solution of cocain is added to one dram of the solution. This addition does away with the local irritation of the homatropin, but is not strong enough to interfere with the corneal epithelium. The homatropin is instilled every fifteen minutes for two hours for purposes of testing the refraction. The recent retesting of cases in which this method was used twenty-five years ago makes one feel that, on the whole, the results have been satisfactory.

For the ordinary case of ophthalmoscopic examination, I have found that euphthalmin (which is now being manufactured under the name of "eucatropin") is the drug *par excellence*. Its use also is made more satisfactory by the addition of a very minute amount of cocain. One instillation in persons over 50 years of age usually gives marked mydriasis in from thirty to thirty-five minutes. In very elderly people, the instillation of a 4 per cent. solution of cocain repeated at the end of ten minutes usually gives a satisfactory dilatation of the pupils at the end of fifteen minutes from the first instillation. It is most important in all cases in which cocain is used to keep the eyes closed as much as possible until the examination is made in order to prevent the irregularity of the corneal epithelium. Some observers have reported satisfactory results from the use of duboisin and daturin.

LOCAL ANTISEPTICS AND ASTRINGENTS

The ophthalmologist as well as the patient must regard boric acid with a sense of eternal gratitude. Though it has been in use for more than 200 years, it still holds the place of regard. It is most widely used as a household remedy, a standby in ophthalmic practice, and a constituent of nearly all proprietary collyria. Its safety and its soothing qualities warrant the continuation of its use.

Mercuric chlorid has long stood at the head of the list of antiseptics in ophthalmic practice. It is of great value in irrigating the conjunctival culdesac in a 1:5,000 or 1:10,000 solution before the operations. In the shape of a salve of 1:5,000, it can be used in the bandaged eye the night before an operation and for filling the eye after an operation. In cases of corneal ulcers, the salve is very efficacious when used in the eye every two hours, in addition to the other treatment. In a few cases, when an idiosyncrasy exists, it causes conjunctival irritation, chemosis and dermatitis. The patient should be tested before the operation for the possibility of such an idiosyncrasy.

Some operators of great experience prefer mercuric oxycyanid.

Chlorin water is one of the most satisfying of all antiseptics in the treatment of certain types of blepharitis, especially blepharitis squamosa. The official chlorin water is used in the strength of one dram to half a pint of tepid water, and the lid margins are thoroughly washed twice a day with absorbent cotton.

Solution of formaldehyd is very valuable in the treatment of corneal ulcers. It may be used by direct application to the anesthetized ulcer in the strength of 1:50, on a cotton tipped probe, or it may be used as an irrigant in from 1:1,000 to a 1:5,000 solution.

Iodin is very efficacious in the treatment of corneal ulcers. A 2 per cent. solution applied to the lid margins is a remedy that has no superior in nearly all cases of blepharitis. Of course, it is essential that all crusts should be removed first.

Yellow mercuric oxid with good reason is a favorite remedy in all inflammation of the lid margins. However, in some cases it acts as a marked irritant, causing a toxic dermatitis. In these cases, ichthyol as a salve is a good substitute, as the most sensitive skins do not seem to resent its presence.

Resorcin, too, alone or in combination with other drugs such as oxid of zinc ointment, is very efficacious.

Among the newer remedies, ethylhydrocuprein hydrochlorid ("optochin"), a quinin derivative, is particularly effective in any pneumococcus affection of the eye or eyelids. It is very valuable in serpiginous ulcers, in all forms of purulent conjunctivitis, and in blepharitis. In the case of the last, I use it in a 2 per cent. solution, while in the former cases I use it in a 1 per cent. solution. The solution should be fresh.

A still more recent antiseptic is mercurochrome, which is a combination of fluorescein and mercury. It is very highly thought of by Dr. Lancaster and his colleagues on account of its germicidal, nonirritating, yet penetrating qualities. Dr. Lancaster advises its use before operations, and also in acute infections of the ocular and palpebral conjunctiva. It may be used in strength from 1 to 2 per cent. solution.

Pyoktanin (one of the anilin dyes) has been much lauded as a remedy for various eye infections, but I have not found it to possess as satisfactory antiseptic properties as some of those already mentioned.

Silver nitrate has long been recognized for its valuable antiseptic and astringent effects in diseases of the conjunctiva. Its effectiveness in gonorrheal conjunctivitis in the adult and in the new-born cannot be denied. Its application, however, is painful. As a preventive measure in the new-born its use is not without danger when in a 2 per cent. solution it is dropped on the delicate cornea. I have seen several cases in which its use was followed by great reaction and whitening of the corneal epithelium—with much alarm to the physician and parents. Owing to the irritating effect of silver nitrate, many substitutes have been found in the silver protein compounds. Among the many, argyrol has proved of great value from its germicidal, cleansing, yet nonirritating qualities. In spite of early laboratory tests showing the inertness of argyrol as a bactericide, ophthalmologists of the greatest clinical experience have continued to report satisfactory results from its use in a multitude of different cases. Later laboratory tests have corroborated the clinical findings of its effectiveness. One of its foremost champions is Dr. Bruns, whose praise is thoroughly justified in my experience. I would be lost without it. Before and after eye operations, in all chronic and acute purulent affections of the conjunctiva, it is of great value. The solution, however, should always be fresh. After instilling the argyrol, I wait a few minutes and then irrigate the eye

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with tepid boric acid solution to remove the coagulated masses of mucus.

While protargol is of great germicidal value, I have supplanted its use by argyrol, owing to the irritating effects of the former.

Copper sulphate in the shape of the copper stick is indicated in trachoma.

Zinc sulphate or chlorid, valuable astringent in all inflammations of the conjunctiva, possesses specific bactericidal effects in cases of diplobacillary conjunctivitis.

Alum, in the shape of the stick, is a good astringent for applying to limited portions of the inflamed conjunctiva.

Among the vegetable astringents, tannic acid is valuable as an ingredient for collyria for home use as well as for application in the office.

MIOTICS

Of the different salts of physostigmin, I have found the salicylate most satisfactory. Physostigmin is a very efficient contractor of the pupils and a stimulator of the ciliary muscle. It is therefore very valuable in the medical treatment of glaucoma. However, it is a drug that should be used with precaution, and the solution should not be stronger than is necessary for obtaining the result desired. A strong solution for hastening the disappearance of medicinal mydriasis is often very uncomfortable and disturbing. In long continued use of even weak solutions it may after a while become a marked irritant, the conjunctiva showing a condition not unlike the conjunctivitis from atropin. In some cases its effect is less severe, the patient complaining merely of irritation after its use, and the eye exhibiting a hyperemia of the ocular conjunctiva with a mild circumcorneal injection. In cases of simple chronic glaucoma with only a moderate increase of tension, I have seen very disastrous results from one instillation of a strong solution of physostigmin (1 per cent. solution). The following case will illustrate this point:

A woman had used for a long period a solution of physostigmin salicylate (½₀ grain to 1 ounce) in each eye twice a day with a very satisfactory effect on the intra-ocular tension. While the patient was in a distant city, the bottle containing the physostigmin solution was broken. Fearing to go without it, the patient requested a physician to give her a prescription for a solution of physostigmin. Within two hours after the instillation of a 1 per cent. solution, an acute attack of glaucoma supervened, which later required an operation.

Pilocarpin hydrochlorid is milder and less irritating than physostigmin, and I prefer it in all cases to hasten the disappearance of mydriasis, and in the majority of cases of glaucoma. I have used it in solution as strong as 2 per cent., and, so far, have not found that any irritating or painful effect has resulted from its use. It is often happily combined with a small amount of physostigmin salicylate. In all collyria containing miotics, boric acid is also added.

SUBCONJUNCTIVAL INJECTIONS

The eye lends itself well to subconjunctival injections owing to the ease with which they can be employed, readiness of absorption, and facility for noting the effects. In properly selected cases, with the majority of drugs used the injection is painless.

Ophthalmic surgeons have used, subconjunctivally, a great variety of drugs in many types of ocular lesions. Darier especially has had great experience in ocular therapeutics of this nature. While I have used subconjunctival injections for a number of years, my list of drugs for that purpose is still small. The subconjunctival use of holocain and epinephrin has been mentioned under local anesthetics.

Among the other remedies with which I have had most experience are sodium salicylate, sodium iodate and citrate, guaiacol, mercuric cyanid and oxycyanid and sodium chlorid. In regard to the use of the solutions of the salts of mercury, I feel that they are of real value, but I also feel that they have at times been used rather unnecessarily and unwisely. For example: With a limited infected ulcer of the cornea, a thorough sterilization by drugs or cautery or by use of the thermophore, followed by a treatment every two hours with antiseptics and a bandage between treatments, the ulcer will heal without the use of mercuric cyanid. It is well to remember Darier's expressed contraindications to the use of subconjunctival injections "when there is present circulatory stasis, rendering absorption of medicaments difficult or impossible by the obstructed lymphatics. Under such circumstances, mercuric cyanid injected beneath the conjunctiva will act as an irritant more harmful than useful, and producing intense pain and chemosis." I have seen several such cases with infected corneal ulcer in which the mercuric cyanid injection had been followed by unpleasant results. Patients, too, complain bitterly of the pain following its use in uveal inflammations, detached retina, etc.

When the specific action of a drug is not called for, but when it is desirable to promote absorption of extravasated blood, inflammatory exudations, or the fluid under a detached retina, physiologic sodium chlorid solution acts admirably in the latter stages after acute conditions have passed away. It is painless, causes very little reaction, and it can be repeated as often as every other day. It is especially effective if associated with other remedies, including rest in bed.

CONCLUSION

In our justifiable enthusiasm over the great achievements of Pasteur and Lister, we have had rather too much tendency to consider the one great factor in infection to lie in the invading bacilli and their toxins, the while overlooking the equally great factor of bodily and tissue resistance. Fortunately, the serious study of food products of late is tending to the correction of this error. This research work is not only of large value in the various so-called nutritive disturbances of the eye, but of great assistance in cases of bacterial infections as well. "One man's meat is another man's poison" is well exemplified in the study of food sensitization in certain obscure ocular manifestations.

Preventive medicine is making vast strides. But in ocular affections we shall still have to rely, for many years, on the so-called curative measures—not the least of which are drugs.

Restoring Ranks of Depleted General Practitioners.—The time has come when qualifications for practicing a specialty should be determined by the state authorities, and the most important of such qualifications should be a stipulation that the candidate must have engaged in general practice, in part time at least, for a period of not less than five years. This will restore the depleted ranks of general practitioners for whom there is a crying need, produce a large number of genuine specialists with a greater knowledge of the whole human body, and tend to eliminate the specialist in name only. —M. Nicoll, Jr., *Health News* **15**:305 (Dec.) 1920.

THE USE OF DRUGS IN NEUROLOGY AND PSYCHIATRY *

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Nervous and mental disorders cover an extremely wide territory, much of which has hardly been explored. The types of disorders are numerous. The principles underlying the disorders are often obscure. In some disorders, as in the infections, the degenerations and the neoplasms, the same principles apply in neurology and psychiatry as in the field of internal medicine. In this group, we are dealing with symptoms of the reactions of the nervous system to infective agents, to poisons elaborated within the system or introduced from without, to changes in the vascular system, to neoplasms, to trauma, and to the degenerative changes of advanced life. In treating these disorders, the physician is dealing with familiar problems. He aims to destroy the infective agent, to eliminate or counteract the poisons, to supply deficient chemical substances, to regulate and safeguard the cardiovascular system, to check or remove the neoplasm, and to deal with the traumatic residual. In this work, he makes use of drugs according to the general principles outlined by Barker, counteracting the organismal irritants, regulating the disordered functions, and supporting the compensatory measures initiated by the various systems.

USE OF DRUGS IN VARIOUS DISORDER GROUPS

In another group of disorders, one has to keep in mind principles which are provisionally discarded by the internist and the other specialists. These disorders are not due to the disordered functions of a single system. They are the result of a conflict between different instinctive forces. They may be a method of adaptation, although an inferior one, to the difficulties of a complex social environment. Where such is the meaning of a disorder, it is obvious that the use of drugs must play a very subsidiary rôle, and the fact that these principles have been so frequently neglected makes the chapter of the abuse of drugs in neurology and psychiatry a somewhat lengthy one. Where a nervous or mental disorder is the expression of a definite structural or toxic involvement of the nervous system, the principles which determine the use of drugs require no special comment. Among the disorders of this group, the syphilitic disorders take the first place, and with regard to them the rôle of drugs has been most important. The introduction of arsphenamin has been the same boon to neurologic and psychiatric practice that it has been to the syphilologist. It is doubtful whether full advantage is taken of the possibilities of the drug. There is still a tendency to look on certain organic nervous diseases of syphilitic origin as not being amenable to this treatment. While this is partly true, the distinction has been taken in too absolute a sense, and it is not possible to foresee with absolute certainty whether a given case will benefit by the drug and if so, to what extent. Those who maintain that it is useless to treat a case of general paralysis of the insane fail to do justice to the actual results of intensive treatment carried on over a sufficiently long period, with the necessary variations in the method, intravenous, intraspinal, intradural, intraventricular or intracisternal. In differentiating the various forms of syphilitic involvement of the brain, the degree of resistance to treatment by arsphenamin is perhaps the most important point to emphasize, and this does not always go parallel with the prominence of those symptoms which we have been accustomed to associate with the fatally progressive type of disorder.

In regard to the treatment of tabes dorsalis, the experience of the various workers differs, but it can hardly be doubted that in some types of cases the symptoms are modified by the treatment.

SYMPTOMS REQUIRING SEDATIVE TREATMENT

In the other groups of organic nervous disorder, in which it is not a question of surgical procedure, treatment is more of a symptomatic nature. In the large group of disorders with involuntary movements (Parkinson's disease, choreiform and athetoid conditions, and various lenticular syndromes) a great variety of drugs have been employed for their sedative action; but, while they may reduce rigidity and stop the involuntary movements, the drugs employed are such that they cannot be continued indefinitely, and treatment for a limited period leaves no permanent improvement. In regard to Sydenham's chorea, the claims for benefit by treatment of the underlying infection by salicylates are not firmly established, and the traditional treatment with liquor potassii arsenitis (Fowler's solution) is more an indication of medical conservatism than of the virtue of arsenic. The motor restlessness in chorea may be so exaggerated as to make sedatives advisable, and it is not uncommon to see children treated with enormous doses of a great variety of sedatives. In many cases a child who is making little progress under such intensive drug therapy will derive the greatest benefit from having the drugs discontinued, and from being treated in a continuous warm bath. The results from subcutaneous injections of magnesium sulphate in chorea may turn out to be of therapeutic importance; the benefit from injections of sodium cacodylate in conditions of spasticity is only transitory, and of academic rather than practical interest.

Of the disorders with motor symptoms, epilepsy is one in which drug treatment has been used for many years with little modification. This treatment consists of the bromids in various mixtures, combined with dietetic and general hygienic treatment. The treatment has been recognized to be merely symptomatic, and its drawbacks have been obvious. The introduction of luminal has, therefore, been welcomed in the treatment of epilepsy, all the more so as it is frequently beneficial in cases of quite severe type. It is, perhaps, premature to say whether, over a long series of years, the treatment will continue to give as good results as it at present promises to do. In hysteria, other types of convulsive episodes are encountered, and the drugs which are frequently used in this disorder belong to the chapter on the abuse of drugs in neurology and psychiatry. They are the pharmacologic evidence of the medieval trend which is still alive below the surface of the modern physician.

SYMPTOMS REQUIRING ATTENTION OF NEUROLOGIST

Of the various symptoms which demand attention from the neurologist and the psychiatrist, the most common are pain and distress, sleeplessness, agitation

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and excitement. These are the symptoms for which the physician has recourse to drugs, while the complex underlying disorders are recognized to be beyond the reach of such simple methods of treatment. It is true that claims have been made for the beneficial effects of certain tissue extracts in cases of pathologic lying; should it be possible to isolate the active principles and produce them synthetically, their application to the more familiar forms and the minor degrees of moral aberration would open a new chapter in the history of ethics.

As for the treatment of pain and distress and sleeplessness, the danger of a purely symptomatic treatment is well known. They are merely indicators of the underlying disturbance, and it is the business of the physician not to confine himself to the warning sign, but to penetrate to the underlying disorder. Merely to remove the disconcerting symptoms involves the double danger of neglecting the fundamental trouble, and of developing an ignoble dependence on the drug. But symptoms deserve some attention on their own account, and pain is the one which is the most insistent. The value of opium and its derivaties is familiar, and the pharmacologist is trying to find out that combination of alkaloids which gives the beneficial effects with the most certainty, and with the least disturbance of other functions. Some have warmly advocated the use of opium in the treatment of conditions of depression, recommending gradually increasing doses, with, later, gradual reduction. Although in an occasional case this treatment is followed by improvement, it is not to be depended on. Similar claims have been made for the beneficial treatment of cases of agitated depression with bromid pushed to the point of intoxication, but these claims, too, are still to be substantiated. For conditions of mental distress with agitation, barbital in comparatively small doses is a very useful drug.

Sleeplessness, too, is an indication that all is not well with the economy, and that it is time to make a detailed review of the personal balance. At the same time, it is frequently advisable to give some temporary help with regard to sleep. Paraldehyd is the drug which gives the nearest approach to a normal sleep, but, owing to its disagreeable odor, the coal-tar derivatives have been much preferred, and of the series barbital is the most uniformly satisfactory. A great number of new hypnotics are being continually brought forth, but the value of each requires some time to be established. Apart from sleeplessness, pain and mental agitation, the patients of the psychiatrist are apt to have conditions with considerable motor excitement, and here drugs in the past have been used to a deplorable extent, and in a routine and unintelligent way. Where now a patient is treated in a continuous bath without the use of any drugs, either for sedative or hypnotic purposes, the patients of a previous generation received their nightly dose of scopolamin. It is true that occasionally one has to resort to a sedative of this description in a wild, unreasoning excitement, but as a rule a case with considerable motor overactivity can be treated without scopolamin, or its equivalent, with a good nursing personnel, facilities for a continuous warm bath, and an occasional dose of paraldehyd.

If in psychiatry the use of drugs is somewhat limited, it is largely because in these complex disorders the chief weight in the treatment must be laid on the personal relationship between physician and patient, on the organization of the nursing personnel, and on the atmosphere of the hospital with its occupational and recreational elements. It is in virtue of the presence of these factors that treatment in hospitals is, as a rule, to be recommended in preference to treatment of the patient at home.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. WILMER AND CAMPBELL

DR. FOSTER KENNEDY, New York: I agree decidedly with Dr. Campbell that, unless we can apply drugs in a more or less intelligent way to the pathology of the disease, we ought to rely almost entirely on physical and psychologic therapeutics. Apropos, however, of our present practice in the treatment of tabes and other syphilitic disorders of the nervous system, I should like to emphasize a position which every medical man, if placed in the position of his patient, would adopt for himself; namely, that once an individual has been definitely infected with syphilis, especially of the spinal nervous system, that patient can never be told that he has had sufficient treatment for the rest of his life. Recurrences occur too frequently to allow any such attitude as that to be adopted, and I am convinced that periodic treatment of the syphilitic, if neurologically syphilitic, will keep in abeyance many of the acute forms of meningitis which quite frequently occur after inadequate treatment. Luminal is the ideal sedative to be used in epilepsy and also in the neuroses associated with the menopause. In overtoned spastic cases resulting from lesions in which the pictures of severe paralysis agitans are produced, I have obtained excellent results by giving 25 minims of belladonna, three times a day, and then scopolamin (hyoscin) at night. The fact that such results can be produced by a drug would go to show that the lesion is not a fixed one, but is rather an edematous block. I support Dr. Campbell in what he said about the use of endocrine products in neurologic practice. Repair processes in central nerve lesions are so slight and so slow that in respect of them we are always in a state of therapeutic ineptitude. Consequently, we easily fall prey to wishful thinking. Too much is being claimed for the repair efficacy of glandular extracts. Many people are being deceived, and false hopes in all kinds of conditions are being aroused. People with brain tumor, etc., are constantly being told they have only to take a little pituitary extract and they will be healed. This cannot be done—yet.

DR. CLAËS JULIUS ENEBUSKE, Boston: Four pharmacodynamic groups were mentioned by Dr. Campbell as being used in the more frequent neurologic and psychiatric disorders, namely, hypnotics, sedatives, antispasmodics and anodynes. I miss a fifth pharmacodynamic principle, the etiotropic mode of action. The etiotropic conception is not my invention. The value of drugs in neurology is necessarily uncertain as long as the medicinal substances are known in the profession chiefly through descriptive terms of properties in vitro, and as long as their use is founded chiefly on empiricisms and inherited habits of thinking. The value of drugs in neurology attains a higher stabilization in the measure as the use of the medicinal substances is being rationalized by, principally, two processes of development: (1) the development of their application in accord with inalterable physiologic laws, for the attainment of definitely preconceived pharmacodynamic action, and (2) the development of scientific biologic tests, whereby it can be controlled that the dynamic action indicated and desired is also actually obtained. The technical realization of this development is, in the main, a biochemical problem. Great advancement in the value of certain drugs has been achieved. For instance, sodium chlorid has attained prominent value through the development of the definition of the strength of solutions in terms of gram-molecule per volume-unit and the definition of its pharmacodynamic action in terms of osmotic pressure. By the application of these principles in a case of dementia praecox—a young man who had crushed the end-phalanx and denuded the second phalanx

of a finger—I obtained growth of new healthy soft tissue completely covering the bone and resulting in a finger as shapely and useful as before. And yet the sodium chlorid was not entirely necessary to this result. For a greater or lesser part of it might have been replaced by certain other chemicals, if only the idea of gram-molecule per volume-unit as expression of the strength of the solution and the idea of osmotic pressure as expression of its action were retained. There are other new principles, biochemical and pharmacodynamic, which are very promising for psychiatric therapy. My investigations have developed an important mode of action in relation to the cause of certain physical symptoms which occur with great frequency in psychiatric diseases, being present in practically every case of the dementia praecox group and also in the manic-depressive group.

TREATMENT OF ARTHRITIS

CHEMICAL AND CLINICAL STUDIES WITH THE SALICYLATES, AND CINCHOPEN AND NEOCINCHOPHEN *

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In 1875, Büss [1] used sodium salicylate in the treatment of rheumatic fever, and since that time salicylates have been regarded as almost specific in the treatment of acute infectious arthritis. Cinchophen was introduced as a remedy for gouty arthritis, owing chiefly to the discovery of its strong uric acid eliminating powers. It has been recognized since the observations of Garrod,[2] more than seventy years ago, that infectious arthritis, differing from gouty arthritis, is not associated with retention and deposition of uric acid; still there has been a tendency among many physicians to regard infectious arthritis as associated with a disturbed uric acid elimination. Although high figures for the uric acid of the blood (from 5 to 10 mg. per hundred cubic centimeters) are almost invariably found in untreated cases of gout, cases of nongouty arthritis seldom show abnormal findings for this blood constituent, except an occasional case with renal complications. Although, as already pointed out, the salicylates have been employed in infectious arthritis largely because of their analgesic and antipyretic properties, and cinchophen has been employed in gout because it stimulates uric acid excretion, a closer study of these two classes of compounds has shown that, in general, they possess somewhat the same properties, i. e., the salicylates also increase the elimination of uric acid, and cinchophen possesses analgesic properties. It is a singular fact that drugs possessing such similar therapeutic properties should have come, for entirely different reasons, to be used in the treatment of infectious and gouty arthritis. This has led us to believe that, after all, these two forms of arthritis may possibly possess something in common.

EFFECTS OF SALICYLATE THERAPY

We have again [3] undertaken a study of the blood uric acid, together with the urea and creatinin, of nongouty arthritics before and during the period of drug therapy, with the hope that such observations might add to our knowledge of this subject. In a comparatively recent paper, Denis [4] has made the suggestion, in connection with the increased uric acid elimination following the administration of salicylates, that the beneficial effects resulting from their use in acute rheumatic fever "may in part at least be due to a power possessed by this class of drugs of increasing kidney permeability, thereby facilitating the rapid and more or less complete excretion of the as yet unknown toxins which produce symptoms of this disease." If this hypothesis should be correct, one would expect a fairly definite relationship between the therapeutic efficacy and the decrease in the uric acid content of the blood. From a study of our actual observations (summarized in the accompanying table), there appears to be very little relation between the drop in the blood uric acid and the clinical improvement.

In connection with this work, however, we have made the interesting observation, the details of which are being reported elsewhere,[5] that the administration of these drugs may reduce the blood concentration not only of uric acid, but also of urea and chlorids, particularly in cases in which there is slight retention of these substances. Although the excretion of uric acid is apparently stimulated considerably more than that of any of the other urinary constituents, still it is obvious that these drugs are much more than simply "uric acid eliminants." Most of our studies in this connection have been made with neocinchophen and cinchophen, although the salicylates probably produce similar effects. It is of interest that, whereas moderate doses of these drugs stimulate the function of the kidney, Hanzlik, Scott and Thoburn [6] have pointed out that full therapeutic doses of the salicylates given to the point of toxicity produce the opposite effect.

The influence of these drugs on the composition of the blood has been studied in a series of more than fifty cases, in about one fourth of which the patients were suffering from arthritis. Tabular data are given for eleven of the arthritis cases. The analytic methods employed for the blood analyses were carried out as already described.[7] Our clinical deductions are based partly on the observations in these cases and partly on observations in a large series of cases in the private practice of one of us (A. F. C.).

A few pertinent clinical facts regarding the individual cases are here presented:

REPORT OF CASES

CASE 1.—A man gave a history of pain and swelling in the joints for five weeks previously; salicylates had been given before admission, without improvement. The patient was brought in by stretcher. After the first day of neocinchophen

* From the Department of Medicine and the Laboratory of Pathological Chemistry, New York Post-Graduate Medical School and Hospital.
* Read before the Section on Pharmacology and Therapeutics at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

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therapy, the temperature dropped from 101 F. to 99 F. and remained normal thereafter. At the end of two weeks, the patient was sleeping well, and did not complain of pain. He left the hospital, recovered.

CASE 2.—A man was admitted by ambulance, complaining of severe pains in the joints and swelling of the forearms. He was unable to use the arms. His temperature was 103 F.; leukocytosis 15,400, polymorphonuclears 83 per cent. Following four days of salicylate therapy by rectum, the patient was fairly comfortable, and slept at intervals. Three days later he

INFLUENCE OF SODIUM SALICYLATE, CINCHOPHEN AND NEOCINCHOPHEN ON THE URIC ACID OF THE BLOOD IN INFECTIOUS ARTHRITIS

Case and Diagnosis	Date, 1920-1921	Blood Analyses Mg. to 100 C.c. Uric Acid	Urea N	Creatinin	Medication
1. B. H., man, aged 31, acute infectious arthritis	4/30	Trace	17.2	2.3	Salicylates previous to admission; neocinchophen, 50 grains daily, 5/1-7
	5/ 1	2.0	14.4	1.8	
	5/ 7*	1.8	14.2	1.6	
	5/ 9	2.1	10.5	1.4	
2. L. G., man, aged 42, acute infectious arthritis	1/ 5	2.7	10.0	2.1	Sodium salicylate given, 240 gains daily by rectum in 1 per cent. starch solution, 1/6-9
	1/ 6	2.8	10.3	1.9	
	1/ 9*	2.7	15.2	2.5	
	1/10	3.0	16.0	2.3	
	1/13	2.9	14.9	2.5	
3. N. T., man, aged 30, acute infectious arthritis, endocarditis	1/ 6	2.2	14.7	2.2	Neocinchophen, 100 grains daily, 1/7-11
	1/10*	1.0	10.0	2.0	
	1/12*	0.0	9.7	2.0	
	1/15	2.7	12.3	2.1	
4. S. F., woman, aged 43, acute infectious arthritis	11/24	3.0	11.8	1.8	Sodium salicylate, 180 grains daily with sodium bicarbonate, 11/25-27; neocinchophen, 45 grains daily, 12/2, 75 grains, 12/3, 100 grains, 12/4-5, 180 grains, 12/8, and 200 grains, 12/9-18
	11/28*	Trace	12.0	1.9	
	12/ 1	1.4	11.0	...	
	12/ 5*	Trace	8.7	1.8	
	12/ 7	2.7	11.5	2.0	
	12/16*	1.2	12.2	2.0	
	12/18*	1.7	12.1	2.1	
5. H. J., man, aged 34, acute infectious arthritis	4/17*	1.3	14.2	...	Sodium salicylate and sodium bicarbonate, 170 grains each daily, 4/9-16; neocinchophen, 50 grains daily, 4/22-24; cinchophen, 50 grains daily, 4/30-5/1
	4/20	1.7	16.2	1.9	
	4/22	2.2	15.0	1.8	
	4/26*	1.8	13.6	...	
	4/30	2.0	17.2	1.4	
	5/ 1*	1.5	17.1	1.8	
	5/ 7	2.2	18.0	2.0	
6. G. F., man, aged 29, acute infectious arthritis	5/ 1	2.3	10.0	1.5	Neocinchophen, 50 grains daily, 5/2-7
	5/ 2	2.2	10.2	1.4	
	5/ 7*	1.8	10.8	1.6	
	5/ 9	2.6	11.7	1.5	
7. C. R., woman, aged 47, acute infectious arthritis	4/20	2.6	15.7	2.1	Neocinchophen, 50 grains daily, 4/20-22 and 24-27
	4/23*	2.5	13.9	2.2	
8. G. E., man, aged 44, acute infectious arthritis	4/30	3.6	16.3	1.8	Neocinchophen, 50 grains daily, 5/1-8, and cinchophen, 50 grains daily, 5/11-15
	5/ 1	3.6	15.1	1.5	
	5/ 6*	3.1	15.4	2.0	
	5/11	3.6	18.0	2.3	
9. J. McG., man, aged 40, chronic arthritis	11/ 5	4.5	18.2	2.0	Purin-free diet, 11/11-15; cinchophen, 50 grains daily, 11/18-21; neocinchophen, 50 grains daily, 11/27-30, 75 grains, 12/1, 100 grains, 12/2
	11/11	3.3	....	...	
	11/15	2.5	12.4	...	
	11/22*	2.0	....	1.9	
	11/27	2.0	13.2	1.9	
	11/30*	1.5	12.6	...	
	12/ 2*	3.5	11.2	2.0	
	12/ 3*	2.4	11.2	2.2	
10. A. P., woman, aged 60, chronic arthritis, with renal impairment	9/20	5.9	21.9	1.9	Low protein diet; cinchophen, 37.5 grains daily, 9/30-10/9
	9/29	5.6	22.9	2.0	
	10/ 3*	2.9	21.7	...	
	10/ 6*	2.5	17.2	...	
	10/10*	Trace	18.7	2.1	
11. E. R., woman, aged 38, chronic arthritis	3/ 7	2.6	10.6	2.2	Neocinchophen, 50 grains daily, 3/10-12, and 100 grains daily, 3/16-18
	3/10	2.9	10.9	2.2	
	3/13*	2.8	11.6	2.5	
	3/16	3.4	10.5	1.9	
	3/19*	1.4	11.1	1.5	

* Blood analyses after medication.

was greatly improved, was out of bed, and able to use both arms; so he left the hospital. At all times, the urine contained a small amount of protein, and red and white blood cells.

CASE 3.—A man was admitted by ambulance, complaining of severe pains in the forearms. He was unable to use the arms. Examination revealed a temperature of 103 F.; leukocytes 17,100, with polymorphonuclears 83 per cent.; urine protein + +. Neocinchophen was administered by mouth, 100 grains daily for five days. After two days of this therapy, the urine protein was +, and at the end of the period, negative. After two days the patient was free from pain; after six days he could use his arms freely, and was out of bed; ten days after admission, he left the hospital, cured.

CASE 4.—A woman, on admission, complained of extreme pain in right leg and arm, and swelling and stiffness in both limbs. Her temperature was 100-101 F. She was at once put on sodium salicylate and sodium bicarbonate. From admission, she was restless and unable to sleep, and on the third night delirious. The salicylates were discontinued. On admission, the urine protein was negative, but before the salicylates were discontinued it was + + + +, with many red cells and a moderate number of leukocytes in the sediment. After a three days' interval, neocinchophen administration was started, and was raised gradually to 200 grains daily. After discontinuance of the salicylates, the urine protein dropped to +, and was uninfluenced by the neocinchophen. The patient considerably improved the first day of neocinchophen therapy, and markedly improved on the third day. No deleterious effects were noted from the rather large doses. The patient recovered.

CASE 5.—A man was admitted by stretcher, helpless and complaining of severe pain in the arms, legs and back. The onset occurred five weeks previously. Examination revealed leukocytes, 18,000, and temperature 103 F. At once sodium salicylate and sodium bicarbonate were given by mouth, with local applications of methyl salicylate. After one week, the treatment was discontinued. The pains were still severe, and temperature was 102 F. After a five-day interval, during which the patient did not improve, neocinchophen was started. The next day he was free from pain, and could use the arms very well. The fourth day, he was out on the roof, felt very well and had no pains. Recovery ensued.

CASE 6.—A man was admitted complaining of swelling and pain in both hands and the right foot, of twelve hours' duration. Examination revealed a temperature of 103 F.; leukocytes 18,000, with 83 per cent. polymorphonuclears. Neocinchophen therapy was instituted; and after six days, the swelling of the hands and feet was reduced, and the pain coincident with movement of the joints was markedly reduced. Next day the patient was in a chair, feeling greatly improved. Recovery followed.

CASE 7.—On admission, a woman complained of severe pains in both arms and hands, and of stiff joints. She was unable to sleep. The leukocyte count was 23,200; the temperature before therapy 102-102.4 F. At the end of the first day of neocinchophen therapy, the patient was fairly comfortable. The urine was negative. At the end of ten days, she was sleeping very well and complained of no pain. Recovery followed.

CASE 8.—A man suffered from severe pains in the arms and legs. There was a temperature of 101 F.; leukocytes numbered 16,600, and the urine showed a trace of protein and an occasional hyaline cast throughout his stay in the hospital. Neocinchophen was given for the first week, with considerable clinical improvement. It was discontinued for two days, whereupon severe pains reappeared. Cinchophen was then given for five days, with marked improvement. The patient was discharged, improved.

CASE 9.—There had been swelling and pain in the knee joints, shoulder joints, wrists and elbows for five years previously. There was no rise in temperature, nor leukocytosis. The patient was improved by dietary measures, but after four days of cinchophen therapy he was able to be up in a wheel chair; after a six-day interval, neocinchophen therapy was begun. The knee joints, which had especially troubled the patient, were free from pain in four days, and he was able to walk about the ward with ease. The urine was negative throughout. The patient left the hospital markedly improved, except for deformity in the legs.

CASE 10.—A woman had chronic arthritis affecting both knees, and a tumor in the left breast, probably malignant. There was no rise in temperature. Slight nitrogen retention was noted, but no proteinuria at any time. Cinchophen therapy was employed and caused nausea. The uric acid and urea of blood were appreciably reduced, but there was no marked clinical improvement. The patient was removed against advice.

CASE 11.—A woman complained of pains, with moderate degree of ankylosis in various joints, of ten years' duration. There was no rise in temperature, and the urine was negative throughout. Low carbohydrate diet was prescribed, with neo-

cinchophen therapy after a short control period. The pain was relieved, but ankylosis remained unchanged. The patient left the hospital slightly improved.

COMMENT

Judging from our present studies, the excretion of uric acid is not so readily stimulated by these drugs in cases of infectious arthritis as in most other conditions. The relative inertness here noted is accentuated in advanced nephritis, in which these drugs may have little or no influence on the uric acid excretion.[8] In three of our eleven tabulated cases (3, 4 and 10), however, the blood uric acid was reduced to a trace, and in these cases there was also a noticeable drop in the urea. The absence of chemical blood changes in the remaining cases can probably be ascribed, in part at least, to the acquisition of a tolerance for this group of drugs.

As there appears to be no relation between the blood changes and the therapeutic efficiency of the different drugs, it seems improbable that the clinical improvement is in any way dependent on the increased excretion of uric acid or other substances by the kidney. We have been led to believe, as a result of unpublished experiments carried out in this institution by Simpson and Meeker, that the improved kidney function is probably dependent on an altered circulation in the glomeruli. Similarly, Dr. Hanzlik[9] has suggested that the benefit to the joints may possibly be attributed to local circulatory effects, which facilitate the interchange of inflammatory and metabolic products.

Although our studies were begun with the idea of comparing the action of cinchophen[10] and sodium salicylate, many more observations have recently been made with neocinchophen than with cinchophen, for the reason that neocinchophen is much less liable to produce gastro-intestinal disturbances. Neocinchophen is an ester which appears to be quite inert in the stomach. We originally supposed that the therapeutic effects of neocinchophen would be less pronounced than those of cinchophen, but this idea does not appear to be borne out by our results.

In the doses which we employed, neither cinchophen nor neocinchophen produced proteinuria or intensified it when already present.

Cinchophen and neocinchophen, particularly the latter, appear to be very promising agents in the treatment of acute infectious arthritis. Drs. Hanzlik and Scott[9] write us that they have formed a similar opinion.

CONCLUSIONS

1. It may be stated in general that the salicylate and cinchophen groups of drugs show comparatively little difference in their analgesic, antipyretic and "uric acid eliminating" effects. It should be noted, however, that this latter term is not sufficiently inclusive, since these drugs also stimulate, to a lesser degree, the elimination of other waste products.

2. There appears to be no relation between the therapeutic efficiency of these drugs in infectious arthritis and their influence on the blood uric acid, a statement which is not generally regarded as applying to gouty arthritis.

3. In the series of cases here reported, cinchophen and neocinchophen seemed to have a more specific effect in the severe cases of infectious arthritis.

4. The salicylates have the distinct disadvantage of producing marked proteinuria and casts when given in large doses. On this account, cinchophen and neocinchophen are the drugs of choice when, for any reason, it seems desirable to favor the kidneys. Furthermore, the latter drugs appear to produce their therapeutic effect through smaller doses.

5. The salicylates have the advantage of being better assimilated by rectum.

6. Cinchophen and neocinchophen, particularly when given with alkalis, are better tolerated by the stomach than salicylates. Since neocinchophen is an ester instead of an acid, there is less need of using alkali than with cinchophen. In fact, when given without alkali, neocinchophen does not seem to irritate the stomach.

7. Although a few cases of marked idiosyncrasy to the salicylates (acetylsalicylic acid), in the nature of an allergic reaction, have been reported, our experience is that patients are more liable to have vasomotor disturbances of the urticarial type from cinchophen. No serious instances of the latter have been observed.

525 Park Avenue.

8. Fine, M. S., and Chace, A. F.: The Diminished Power of the Nephritic Kidney for Eliminating Uric Acid, Arch. Int. Med. **16**: 536 (Sept.) 1915.

9. Personal communication to the authors. Drs. Hanzlik and Scott have (since the reading of our paper) reported their results (Cinchophen, Neocinchophen and Novaspirin in Rheumatic Fever, Comparative Therapeutic Efficiency, Toxicity and Renal Functional Effects, J. A. M. A. **76**: 1728 [June 18] 1921).

10. Cinchophen and neocinchophen are the terms adopted by the Council on Pharmacy and Chemistry of the American Medical Association to apply to phenylcinchoninic acid and the ethyl ester of paramethylphenylcinchoninic acid. The latter substance may now be obtained under the trade name of tolysin.

ABSTRACT OF DISCUSSION

Dr. Ralph Pemberton, Philadelphia: Since recognition of the agency of focal infection in arthritis, we must agree that the pendulum has swung heavily to the bacteriologic end. In our series of 400 cases, we were unable to relate to impaired renal function the benefits most writers ascribe to eliminative procedures. In respect to uric acid, the evidence Dr. Chace introduces tends strongly to get away from the remnants of the belief that it plays an important rôle in this disease. Apropos of this question, I feel more and more that there is much in common between arthritis and gout. The point which has interested me most, perhaps, in Dr. Chace's paper has been the suggestion he made as to the action of the salicylates upon the circulatory system. Dr. Hendrix, Miss Crouter and I have been interested in the respiratory function of the blood, and we have made the observation that if the normal person is compared with the chronic arthritic, there may be found a higher percentage saturation of oxygen in the blood of the latter. With convalescence there seems to be a tendency for that percentage to drop back toward its normal value. The normal individual shows, roughly, a percentage of perhaps 46 or 47. The arthritic runs about 18 per cent. higher. Indeed, he may go very much higher than that. The same phenomenon of a rise in percentage saturation with oxygen takes place in cases in which there is a lowered sugar tolerance, when the blood is examined during the course of that test. We have been rather driven to the conclusion that while this may be referable to a lowered metabolism, it is easy to explain it on the basis of a change in the circulation: whether a vasoconstriction is hard to say. Hoover has shown that various toxins and poisons have the property of inducing capillary constriction, and Rosenow stated that in some experiments on streptococcal arthritis on rabbits there has been found in the tissues adjacent to the joints a very distinct vasoconstriction. I am making so bold as to suggest that part of the phenomena of arthritis may be referable to the oxidative disturbance consequent on such conditions. It is my belief that most types of arthritis tend to a common pathologic basis. Furthermore, I believe it justifiable to relate both acute and chronic arthritis or "rheumatism" to the same underlying pathologic condition, although they do not present the same syndrome clinically.

V. 192

PLASTIC REPAIR OF THE EYELIDS BY PEDUNCULATED SKIN GRAFTS*

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Plastic surgery of the face, especially of that part bordering on the orbits, rightfully the domain of the ophthalmologist, received during the World War a tremendous impetus, due primarily to the large number of injuries involving the eyes, nose, and orbits, which were received by the men in that conflict. This invaluable experience gained by the ophthalmic surgeon will, without a doubt, find a fruitful field of usefulness in the treatment of those post-war cases of injury, incurred in industrial occupations, and other peace time pursuits. These cases, while not precisely similar to war injuries, are governed in the manner of their correction by the same general surgical principles. The restoration of the eyelids and the socket has a most important bearing on the mental attitude of the patient, and means much to his or her appearance, both cosmetically and practically. A person with an empty, deformed socket, unable to retain an artificial eye, or with no eyelids, or with only part of an eyelid to cover a retained globe, has greatly limited opportunities in securing industrial employment; and embarrassment arising from the gazes and questions of the curiously inclined public cause him to shun society and seek seclusion.

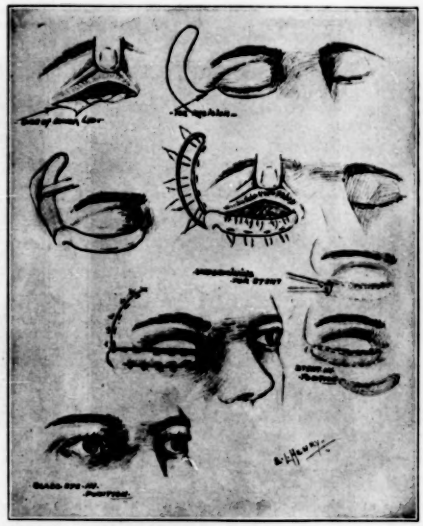

Fig. 1 (Case 1).—Schematic drawing showing restoration of lower conjunctival culdesac by a pedunculated flap graft following an Esser inlay.

TYPES OF GRAFTS

There are three general subdivisions of lid restoration, which may be classified thus: (1) pedunculated, autogenous grafts; (2) free dermic, or Wolff, grafts; (3) epidermal or Thiersch grafts. The latter type, used after the method of Esser, of Holland, and Gillies, of England, while not applicable to the type of case we have under consideration, has a most valuable use. It is undoubtedly the best method of treating those cases of severe burns, with glazed, parchment-like skin surface, and cases of ectropion due to contracture of scar tissue, or when it is impossible to use a pedunculated graft, when indicated, because of scars, or inability to obtain a vascular supply to the graft. According to the title of this paper, I shall devote attention to the discussion of cases which are of the first classification and try to demonstrate the practical application of the pedunculated skin graft in the reconstruction of the eyelids. This type of graft is very successful in facial work, owing to the excellent arterial supply from many sources, which permits the selection of several different locations from which to obtain tissue to rebuild the eyelids. First, with the base of the flap at the external canthus, lid tissue may be obtained from either the temple, eyebrow, scalp or cheek. Second, with the base over the nose, the forehead can be utilized, and employing the side of the nose as a base, a flap may be shifted from one eyelid to the other on the same side. Third, with the base on the neck, the skin from the chest can be utilized, tubing the pedicle of the graft; this method was devised by Major Gillies.

PREREQUISITE TO SUCCESS

Before undertaking the actual plastic transplant, there are a number of important underlying factors to be considered, which if neglected are likely to spell failure, no matter how skilfully or carefully the surgery may be performed. It is essential that sufficient time shall be allowed to elapse, following the primary repair, in order that all shrinkage and contracting of scars shall have ceased and the injured parts restored to their normal tone.

Neglect of this point explains the failure of incisions to heal kindly, and the failure of the transplanted graft to accomplish its purpose, owing to the secondary contraction, which so alters the size and shape of the area to be covered that the graft as planned is insufficient for the purpose. In all cases involving the lacrimal area, the removal of the lacrimal sac should be the first step undertaken; this greatly lessens the danger of the loss of the graft by infection, which so often lies dormant in the lacrimal sac or canal, only to flare up with amazing rapidity and destroy all our plastic repair. It is also necessary to visualize the change in the shape and position of the area from which the graft was removed, because it is quite as important to cover this area as the area for which the surgery was undertaken. We cannot afford to distort the eyelids or the corner of the mouth, nor do we wish to bring the hair line of the scalp down to the eyebrow. If one has the time and facilities, much can be learned by experimenting with the intended grafts, cut from a gelatin-faced cast, made of a plaster-of-Paris base, with the face composed of a gelatin compound known as Henning's paste. This enables the surgeon to deal with the problems that actually arise and should prove most instructive, because each case is a law unto itself and has to be

* Read before the Section on Ophthalmology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

handled as such. The general surgical principles involved will be outlined in the description of the technic employed in the first case, while the many variations and modifications will be discussed as they arise in the other cases.

There is no doubt in my mind but that if photographs were taken today the end-results would show much greater improvement than the accompanying illustrations, which were of necessity taken shortly after the operation had been completed, and before the men were transferred to convalescent centers, to provide the much needed room for the unoperated cases from overseas. Then too the fitting of artificial eyes was limited to a selection from the stock on hand; the government did not employ artisans to make eyes to order. Massage was most helpful in softening and eliminating scars; many of the patients were greatly improved in appearance following a supervised course of treatment in the department of physiotherapy.

Fig. 2 (Case 1).—Absence of lower lid with discharge of tears and exposure of conjunctiva.

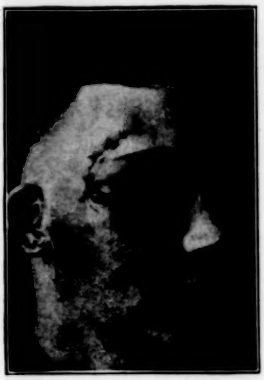

Fig. 3 (Case 1).—Pedunculated graft sutured in place by mattress suture and interrupted sutures of silk.

Fig. 4 (Case 1).—Immediate result after Esser inlay: tissues swollen before toning down by massage; artificial eye held in new lower culdesac by a new lower lid.

The accompanying illustrations are photographs of soldiers operated on by the personnel of the ophthalmologic service at the U. S. Army General Hospital, No. 11, Cape May, N. J., which consisted at that time of Drs. William A. Krieger, W. S. Reese, H. W. Scarlett and myself, and for a limited time, Drs. M. Wiener and E. La Mothe. The excellent schematic drawings, descriptive of these operative procedures, were made for me by the members of the art staff of the hospital, Mrs. A. K. Chesney, Miss A. G. Garret and Miss E. I. Henry. They very clearly and accurately depict the various stages of the operations, as they were sketched at the operating table. These men were all injured by machine gun, shrapnel or fragments of high explosive shells, and the primary surgery had been completed from two to eight months prior to our starting the reconstructive work.

REPORT OF CASES

Case 1.—S. H., aged 30, injured Oct. 9, 1918, was operated on April 17, 1919. This case, illustrative of the first method, is one in which the eyeball and the entire lower lid were lost following injury by machine gun bullet. The mucous membrane was drawn over the outside surface by the resultant scars and allowed the secretions to drain over the cheek, thus preventing the retention of a prosthesis. In this case, a pedunculated temporal graft was used, the temporal artery in the base being employed as the blood supply.

Technic.—Following the extirpation of the sac the edges of the lower lid and conjunctiva were freed from the scar, and the edges were dressed up to determine the size and shape of the graft required. Then, from a piece of rubber tissue a model of the graft was cut, allowing a good margin for shrinkage. With this form, the best site for the graft was tried out. In this case the temple was selected; the graft was marked out with the point of a knife, dissected and swung into place. It was sutured with interrupted silk sutures, or better, mattress sutures, with a continuous overcast suture to approximate the edges. The denuded area from which the graft had been taken was covered by undermining the surrounding skin well back, drawing the edges together, and suturing with silk, horse hair, and silkworm gut. In some cases, it is best to cover in the denuded area first, and suture the graft afterward. The base of the graft has to turn on its own anchorage; therefore it is important to plan very carefully its position, keeping it as close to its new bed as possible, and avoiding too great an angle to prevent puckering of the skin. The tip of the graft should be made blunt and rounding, since then it is much less likely to slough.

Suturing is important, not so much as to the material used as to the method of using it, aiming to interfere as little as possible with the circulation of the flap. A most important consideration is the base line of the flap. One should avoid having too much tension here, or the circulation of the entire flap will be impeded and disaster will result. Dr. V. P. Blair used to remark that the great trouble in maintaining a successful graft was not in getting the blood in, but in getting it out of the flap. So if a graft appeared cyanotic, we would stab it full of holes to drain out the venous blood, which was being impeded in its return, and then hunt for the cause of the blockage. The mattress suture method of wound closure, championed by Dr. George M. Dorrance, proved very successful in its lessened interference with the circulation of the flap, and was a most effectual means of preventing depressed scars, which are to be studiously avoided in plastic work of the face.

This pedunculated flap supplied the tissue for the outer surface of the lid, while the inner surface was obtained by an Esser tunnel, on May 13. That this was too soon after the lid graft was demonstrated at the operating table and

during healing. The final picture of this patient (Fig. 4) was taken shortly after the operation was completed, and does not do full justice to the method of procedure. When I last saw the patient, the swelling in the center of the lower lid was greatly lessened.

CASE 2.—H. C. K., aged 23, injured Nov. 6, 1918, was operated on Feb. 18, 1919. This case, in which there was loss of the inner portion of the lower lid, along with destruction of the eyeball, is interesting for several reasons. It illustrates how necessary it is at times to do so much in order to accomplish apparently so little. The loss of the lid border in this case was sufficient to prevent the wearing of a prosthesis, so we proceeded to supply the new lid by a cheek pedicle graft. During the operation, in suturing the graft well into the inner canthus, we must have got into the lacrimal duct, or canal, since on the second day there were indications of trouble. The flap was infected, and the leukocyte count was 38,000. This was a most unexpected complication, though productive of no bad results. Owing to the excellent and untiring care of the nurses, in the use of *large, hot,* normal salt compresses, kept hot night and day, we did not lose the graft, with the very happy result you see in Figure 8. An important factor in this result was the use of heavy silkworm-gut sutures to coapt the edges of the area from which the graft was removed. They held perfectly until the wound united. There was a surprisingly small amount of scarring in this case, and you will see in Figure 8 that there is no distortion of the mouth.

Fig. 5 (Case 2).—Schematic drawing of restoration of lower lid by a pedunculated cheek graft.

CASE 3.—H. C. S., aged 28, injured, July 18, 1918, was operated on April 1, 1919. In addition to the loss of the middle of the lower lid of the right eye, this soldier also had a contracted socket and loss of bony tissue as shown by a marked depression beneath the socket. This followed injury by a machine gun bullet, which after destroying his eye passed down through the hard palate and mouth and lodged in the left side of the neck just under the skin, being removed by the fingers without operation. The wound in the neck is clearly shown in the last picture.

Operation.—In this case, the procedure was similar to that in the first one, in that it was also preliminary to an Esser tunnel to form a new lower culdesac. The cheek was selected in this case in order to obtain a graft thick enough to build up the depression over the antrum. Care must be taken to avoid the whiskers if possible, also the salivary duct. On May 1, one month later, an "Esser tunnel" operation was performed, and it was my intention later to open the lower incision of the graft and turn a layer of fat from under the graft down under the skin of the face to fill up depression.

Fig. 6 (Case 2).—Absence of left eye: Fragment of high explosive shell entered temple (at site of scar), destroyed eye and inner two thirds of lower lid, and injured bridge of nose.

Fig. 7 (Case 2).—Flap sutured in place, swelling indicating infection; cheek sutures of silkworm gut.

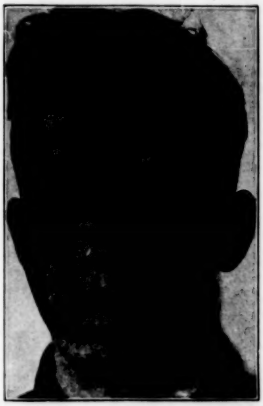

Fig. 8 (Case 2).—Final result at time of patient's discharge; no bad results from the infection; artificial eye in place.

Unfortunately this case was not completed when the hospital was closed.

Case 4.—M. G. S., injured, July 15, 1918, was operated on Jan. 22, 1919. The defect of the eyelids and nose was caused by a piece of shrapnel or high explosive shell, which destroyed the tissues and bony covering of the anterior ethmoid cells.

Before operation
Line indicates incision for flap
Flap in place which pushes up mucous membrane to deepen socket and form new lower lid
Flap in place showing sutures

Fig. 9 (Case 3).—Schematic drawing of pedunculated cheek graft to restore lower lid, preliminary to an Esser tunnel to form new lower culdesac.

This condition when he reached us was very annoying, owing to the discharge of secretions from the nose through the sinus in the ethmoid region, the marked ectropion of the lower lid, the distortion of the upper lid due to scar contraction, and in addition, the constant overflow of tears. This case is of interest, as it is one of the few in which the eyeball escaped destruction following severe injury to the orbital tissues.

Operation.—First, the scar was dissected out and the tissue freed from its bony attachment. This allowed the lids to be restored to their normal position. Then a plug of sterile gauze, tied to a strand of heavy silk, was pulled in through the wound until it blocked the bony opening. This prevented the secretions from the nose gaining access to the under surface of the flap. Then the opening in the bone was covered with a thin sheet of paraffin wax, after which a rather wide graft was swung from the forehead, so that in addition to covering the sinus, it would push up the border of the lower lid, correcting the ectropion, and at the same time relieving the tension on the upper lid. The wounds healed by first intention, after which the plug was pulled out through the nose. No attempt was made in this case to readjust the base of the flap. We were satisfied to let well enough alone, as there was no distortion of the bridge of the nose or malalinement of the eyebrows.

525 Welsh Street.

Fig. 10 (Case 3).—Loss of right eye, contracted socket and loss of lower lid; injury by machine gun bullet which passed through right eye, ethmoid and maxillary sinus, hard palate, and out the left side of the neck.

Fig. 11 (Case 3).—Pedunculated flap from the cheek sutured in place (first dressing); cheek sutures of silkworm gut, flap sutures of black silk.

Fig. 12 (Case 3).—Case not completed, artificial eye in place following Esser inlay; scar on neck shows exit of machine gun bullet, which entered through the right eye. Layer of fat to be shifted from under flap to fill depression over antrum was the next contemplated procedure.

ABSTRACT OF DISCUSSION

Dr. Vilray P. Blair, St. Louis: It is difficult to discuss any phase of eyelid repair without considering all of the methods that may be used, because unless one is prepared to use one or another method, as the case demands, it is possible that the best results might not be obtained. Lancaster called attention to the fact that the pedunculated graft may be excessively thick, and Dr. Cross stated that there might be some hesitation in the establishment of circulation in the graft. In the making of all long flaps, if, instead of attempting to make the flap and transfer it at the same time, the flap is outlined to the exact size desired, and after raising it, it is sutured back into its original bed for about a week, and then transfer it, one can make a long flap, and a very much thinner flap with absolute certainty as to what the circulation is going to be. In the injury cases, especially burns, in which the skin of both eyelids of both eyes has been destroyed, that type of work is prohibited. But here one can turn down a broad pedunculated graft which, after being sutured back in

its original bed for a week, is split into two pieces, and the very thin grafts can be placed one over the two lids at the same time. Another cause of thickening of these pedicle grafts, which we also find in the Thiersch grafts, is that the scar that forms in the bed in which you put the flap contracts. This causes a mounding of the graft in the form of a pad. After six months or a year, the basal scar lets go. I believe the time is coming when the Thiersch graft will disappear and every form of purely surface skin defect is going to be repaired by the full thickness graft. The promise of this work seems to be such that I think we shall be able to get almost perfect results and with no evident deformity resulting from this raising of a flap.

DR. GEORGE H. CROSS, Chester, Pa.: You have the choice of taking a graft as thick as you want it. As Dr. Blair has suggested, if the vitality of the graft is questioned, it is possible to cut it loose and then suture it back into its original place, leaving it until vascularization is complete before putting it in its bed. I forgot to speak of modeling compound. The most painful part of the process in using a graft from the arm or leg or elsewhere in the body is the wound resulting from its removal. We have found that the ordinary dental modeling compound, first warmed and then laid over the area from which the graft was taken, makes a comfortable dressing. Also, in considering grafts of the eyelids you do not have to use adhesive plaster or gauze; after the graft is in place, warm the modeling compound sterilized with 1:500 mercuric chlorid solution, place it directly over the grafted area and apply a bandage; then when you dress it again you can put it right back in its original position. Dr. Gillis once said that the most important point in having the graft "take" was in maintaining an even pressure. By the method outlined you can maintain a pressure which is the same when you dress the case as obtained at the time of the operation.

Fig. 13 (Case 4).—Sinus at base of bridge of nose, ectropion of lower lid, distortion of upper lid by scar tissue, following injury by fragment of shrapnel or high explosive shell. Secretions escaped through sinus when blowing nose.

Fig. 14 (Case 4).—Pedunculated forehead graft sutured in place, covering sinus and relieving distortion of upper lid and ectropion of lower lid. Black silk cord is fastened to gauze plug in ethmoid defect. Photograph taken at first dressing.

Fig. 15 (Case 4).—Final result showing the cosmetic result that was obtained. No attempt was made to replace the base of the flap.

Social Service for Chronic Invalids.—Only a small proportion of the old chronic invalids in institutions or at home can be reclaimed to civil life, but those of the younger generation who become chronic invalids will profit by the new methods of reeducation open to them. Most paitents have some faculty which could be developed along commercial lines, unless they are in need of constant medical or surgical care.—R. Fried, *Hospital Social Service* 4:141 (Sept.) 1921.

RADIUM THERAPY OF TERATOID TUMORS OF THE TESTICLE *

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AND
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The purpose of this paper is to indicate a new conception of the therapy of teratoid tumors of the testicle.

Some years ago the late Dr. Janeway was able in several instances to destroy very large metastatic growths secondary to teratoma of the testicle. This was done by means of a "radium pack." The dose of radium for such a pack is 12,000 mc. hours placed over a tumor mass at a distance of 6 cm. from the skin, the filtration being 2 mm. of lead.

The following history illustrates the extraordinary effect of radium in one of these cases:

H. H. M., aged 36, first seen, Oct. 23, 1916, had had right and left epididymitis in 1906. In 1915 the right testicle became sore and very large, but not sensitive. The patient had lost 15 pounds in three months. The Wassermann test was reported negative. The right testicle was the site of an irregular, semielastic tumor. There was a large mass filling the right side of the pelvis and protruding from the right abdominal wall, manifestly malignant. A radium pack was applied to this abdominal mass. Two weeks later Dr. Keyes removed the tumor of the testicle and cord up to the internal abdominal ring. Pathologic examination (Ewing) revealed teratoma. Two weeks later (and four weeks after the radium application) the abdominal mass could no longer be felt.

March 22, 1920 (three years and five months after the patient was first seen), he reported by letter that he was entirely well.

There have been several cases as brilliant as this. During the past few years we have attempted to

* Read before the Section on Urology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

determine which testicle teratomas react to radium and what is the best way to use this agent.

PATHOLOGY

Ewing places the varieties of teratoid tumors of the testicle in three main classes:

1. Adult embryomas or teratomas, constituting a relatively small group.
2. Embryoid, teratoid or mixed tumors, more frequently seen than the foregoing.
3. Embryonal malignant tumors, these being most often seen.

The tumors arise, with rare exception, from sex cells situated in the rete testis, and the teratoma may develop either toward the testicle and epididymis, involving both in a large tumor mass, or much more rarely toward the epididymis, forming a typical tumor of the epididymis. We have seen two tumors of this variety.

METASTASES

Ewing says:

The intraperitoneal nodes at the celiac axis are often involved through the lymph channels of the spermatic veins, and an epigastric tumor is often the first sign of recurrence. This form is especially common with the highly malignant embryonal carcinomas. From this point there may be rapid progress upward, so that mediastinal and even cervical tumors may divert attention and become the largest tumors in the body. Invasion of the spermatic and iliac veins, with continuous tumor growth extending as far as the heart, has been observed both with chondrosarcoma and chorioma. Discontinuous metastases by way of the veins are most frequent, and they give rise to tumors of the lungs, liver, brain, kidney and stomach.

Fig. 1.—Teratoma testis: The epididymis and cord are invaded; the testicle proper is virtually free of tumor tissue.

DIAGNOSIS

Notwithstanding the situation of testicular tumors, making them easily accessible to palpation and observation, the diagnosis very often is difficult. One of us vividly remembers doing an operation for hydrocele and noting at the time of operation that there was what we took to be inflammatory change in the epididymis. The patient left the hospital healed. He went to another hospital a month later, where a teratoma testis was removed. When the tumor is typical, the whole testicle an irregular, hard mass in which no distinction between the testicle and epididymis can be made, the main diagnosis is between teratoma and gumma. In a large number of cases of gumma of the testicle, seen at Bellevue Hospital in the Service of Dr. Keyes, we do not remember having seen one that did not give a positive Wassermann test. We, on the other hand, have seen only one patient who had syphilis give a positive Wassermann test and who had a teratoma testis. Therefore a positive Wassermann test strongly points against the diagnosis of testicular teratoma.

We have seen two cases in which the teratoma grew atypically and involved the epididymis alone, giving a picture not unlike tuberculosis of the epididymis. In one of these cases the diagnosis of teratoma was made prior to operation because of the secondary tumor mass in the abdomen. The preoperative diagnosis of teratoma is very important because we have never seen a patient in whom the tumor was incised either for the purpose of making a diagnosis or under a mistaken diagnosis—hydrocele, spermatocele, epididymitis, etc.—that did not succumb to a local recurrence of the tumor.

When the teratoma occurs in an undescended testicle, the diagnosis is still more elusive.

THE INEFFICIENCY OF PRESENT OPERATIVE METHODS

Orchidectomy.—In nineteen postoperative recurrent cases which we have seen at the Memorial Hospital, orchidectomy had been performed in eighteen. There were eight recurrences in the groin along the spermatic cord; seven in the abdomen along the spermatic lymphatics, and four in the lungs. In six cases, more than one region had become involved.

Radical Operation.—Hinman reports several cases in which he has done the more radical dissection, taking out the testicular tumor and dissecting the fascia around the spermatic vessels up as high as the kidney. In one of his cases there was a secondary tumor of one of the perispermatic lymph-nodes which was dissected out. This patient lived for some months after the operation, apparently well.

PRESENT TECHNIC AT MEMORIAL HOSPITAL

We treat early cases as follows:

A careful physical examination is made, including roentgenograms of the chest. When distant metastases and regional involvement are not found, the case is classified as "primary operable." The patient is admitted to the hospital, and the testicular tumor, spermatic cord and abdomen along the tract of the spermatic

vessels are treated with the radium pack.[1] The dose over the testis is usually 12,000 mc. hours at 6 cm. distance, the filtration being 2 mm. of lead. The same dose is considered sufficient for the other regions. The patient is now permitted to go to his home, but he returns for examination once a week.

We have found that the rapidly growing, cellular and more malignant embryonal types of these tumors are much more sensitive to the action of radium than those tumors in which adult tissue predominates. Therefore, when the tumor rapidly reduces after irradiation, we know that we have to deal with a tumor in which embryonal tissue predominates. In such tumors it is our custom to delay operation for a number of weeks and even months so as to get the maximum effect of the irradiation. In tumors which do not decrease in size after irradiation we operate in from three to six weeks after the application of the pack. The technic of operation is as follows:

A curved abdominal incision is made, beginning at the external abdominal ring, and sweeping outward and upward toward the kidney. The spermatic vessels are exposed, the vas is cut and the tissue on each side of the spermatic vessels (to the distance of about 1 cm.) is bluntly dissected upward as high as the renal vessels. This mass of tissue embodies the lymphatic vessels and nodes around the spermatic vessels. All of this dissection is extraperitoneal, and all this time the testicle is still lying in its bed. Handling the testicle before its vessels and lymphatics are cut tends, we believe, to squeeze tumor cells into the general circulation.

If there are any glandular metastases, these are dissected out and tubes of screened radium (silver, 0.5 mm., and rubber, 2 mm.) are placed in its bed, using 200 mc. hours to each. These tubes are later removed by attached strings. Finally the vessels are cut high up and the testicle is dissected out and removed and the wound sewed up. We have performed this operation some eight times, have had no postoperative deaths, and do not believe it to be a serious operation if infection does not occur. From three to six weeks after the wound is healed, radium packs are again applied over the length of the scar.

Fig. 2.—Longitudinal section of gross specimen. Removed twelve days following radiation of 13,070 mc. hours, applied externally in form of pack. The testis measures 14 cm. in circumference. It is firm, fibrous and elastic. Section shows smooth translucent tissue, divided by several bands like the septa of the organ, and there are several necrotic areas 1 to 2 cm. wide, sharply circumscribed. Some of these are yellow, others orange colored. The tunica albuginea is thickened, but intact. The upper nodes of the cord are slightly enlarged.

RESULTS

Of the thirty-six cases of teratoma testis treated at the Memorial Hospital during the past four years, there were:

1. Three cases classified as "primary operable," that is, three cases which were seen before operative procedure had been undertaken, and which at the time of admission showed by physical examination neither such local extension nor metastatic involvement as would prevent complete operative removal of the tumor process. Of these patients one is living without recurrence nine months after being first seen; one is dead, and one is lost track of.

2. Eight cases classified as "primary inoperable." These included patients who had never been operated on, but who presented at the time of admission the physical signs of metastases, so that operative procedure could offer no hope of complete removal of the disease. In one of these the diagnosis of teratoma was made prior to operation because of the secondary tumor mass in the abdomen. Of these, three are living, forty-one, two and three months after being first seen; three are dead, and two have been lost track of.

3. Nineteen cases of "postoperative recurrent teratoma." These patients had received surgical treatment elsewhere and had been referred to the Memorial Hospital at various time intervals after the appearance of recurrences. Of these, five are living, seventeen, twenty-eight, eighteen, twelve and three months after they were first seen; eight are dead, and six have been lost track of.

4. Six cases classified as "for prophylactic irradiation." These patients had been referred after operation elsewhere, but before recurrences had been observed. Of these, two are living, two and nine months after the patients were first seen, two are dead, and two have been lost track of.

In one of the primary operable cases irradiated before and after operation, as outlined above, the patient died of recurrences some months after operation. The teratoma in this case was of the adult type.

These statistics emphasize the extreme malignancy of teratoma testis. We believe, however, that radium is a very valuable adjunct to operation in dealing with this disease. The type most often seen and most malignant, the embryonal, is the most sensitive to destruction by radium.

1. Failla, G.: Radium Technique at the Memorial Hospital, New York, Arch. Radiol. & Electrotherap. **25**:3 (Jun.) 1920.

ABSTRACT OF DISCUSSION

DR. EDWARD L. KEYES, JR., New York: The problem of removing these testicular growths, as has been pointed out by Dr. Barringer, is not quite the same as that in which we are dealing with bladder and prostate tumors, because these rapidly growing cellular growths yield readily to irradiation. I saw a patient in 1916 who had a large tumor of the testicle that simulated hydrocele. Another physician advised a combination of radium and surgery. He treated the patient by a so-called pack over the abdomen, not permitting the radium to reach the testicle. After two weeks I took the patient into the hospital for operation. At that time the tumor in the abdomen was not visible, although I looked for it. I removed

the testicle, and the patient remained in the hospital for two weeks. At the time he left the hospital it was no longer possible to palpate any tumor in the abdomen, following one radium pack. A year ago he was living and perfectly well.

DR. FRANK HINMAN, San Francisco: In about twenty-five years at Johns Hopkins Hospital they had only twenty-six cases, and I have seen only eleven cases in the six years since leaving there, so that it is rather remarkable that the authors should have such a large series to report. Following radical operation without radium, I have one patient living after seven years in whom glandular metastases had occurred. Six other patients are all alive over one year; the longest next to the seven years is four years. In all of these cases, malignant metastases were found in the gland area removed, except in two. Two attempts have been made to treat these patients by radical operation in which large inoperable masses along the aorta were found. At the time we did not have radium, but undoubtedly radium should be applied in such cases as well as the others, because it is imposible to remove the glands operatively. We have recently had one operative death on the third day following radical resection. The patient was talking and apparently in excellent condition, when he suddenly collapsed. A necropsy was not obtained; we attributed death to cardiac failure. Numerous glandular metastases had been successfully removed, but in doing so resection of the inferior mesenteric artery was required. We have since tied off many of these arteries in dogs, cats and rabbits, with absolutely no effect. Pathologists tell us that it is frequently found completely obstructed without apparent injury to the intestines, and other surgeons have tied it next to the aorta without hesitation. We do not believe that its resection was the cause of this fatality.

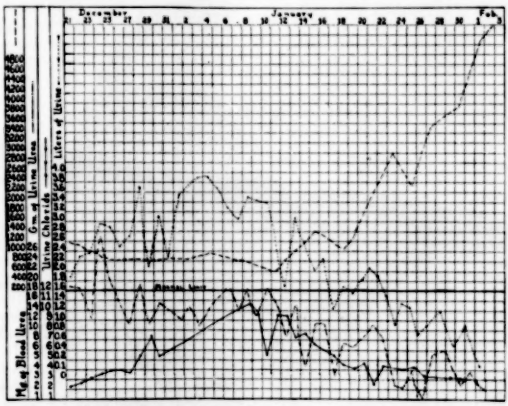

Fig. 1.—Fluctuations of blood urea, urine urea, urine chlorids and total urine per day, during the course of the disease. (Prepared under the direction of Dr. Herman Mosenthal in the clinical laboratory of the base hospital, Camp Gordon.)

DR. JAMES D. BARNEY, Boston: Some years ago I was asked to see a patient in consultation with another physician. I had known the patient for many years. He had always been considered to be tuberculous and the physician who asked me to see him thought he had a tuberculous epididymitis. I agreed in this diagnosis and advised operation. The surgeon did not think well of that and sent the man to Saranac Lake for tuberculin treatment, etc. A few months later he was obliged to operate because of an enormous growth of the testicle. This growth was removed and reported to be a teratoma. In another case seen with another surgeon I agreed in a diagnosis of tuberculosis of the epididymis and advised operation. This surgeon also refused to operate, but the patient went to a third surgeon who operated and found teratoma. The first patient died about three years after his operation from metastases; the second patient is still living. It is important to bear in mind the possibility of tumor of the testicle, which in these cases seemed to begin in the epididymis, whenever one is in the least doubt as to the diagnosis.

DR. ARCHIE L. DEAN, JR., New York: The diagnosis is very important. We usually see a young man with a scrotal tumor that has been growing for several months, dating frequently from a definite trauma; there is no sign of inflammation, the swelling assumes the shape of the normal testicle, the outline of the penis is not encroached on as with hydrocele, and the palpating fingers note elastic areas, very hard spots and may dip into cystic depressions. Manipulation is painless. Light is not transmitted. Metastases may occur by three routes: (1) Inguinal adenopathy occurs only after the tumor has involved the scrotal integument; (2) lymphatic drainage most frequently follows the spermatis vessels; (3) venous metastases are facilitated by the proliferation of the vessels about the tumor, and metastases are then found in the lungs.

BILATERAL GLOBULAR DETACHMENT OF THE RETINA IN RENAL RETINITIS

F. PHINIZY CALHOUN, M.D.
ATLANTA, GA.

The case herewith reported was studied in the base hospital at Camp Gordon during the war, and through the kindness of Dr. Herman Mosenthal, then chief of the medical service, I am permitted to make this report.

The case is of particular interest to the internist, as the laboratory phase of it was thoroughly worked up by one well qualified, as is evidenced by the accompanying chart. The eye findings in connection with chronic nephritis especially concern the ophthalmologist.

REPORT OF CASE

History.—H. M., aged 21, Casual Officer 32254, service one year, was brought into the officers' ward on the night of Dec. 17, 1918, in coma. The history obtained from a fellow officer was that until December 15 the patient had been on duty and apparently well. The following day he complained of headache. December 17, the headache was severe and he had vomited. He was found in bed that evening unconscious and breathing heavily, when he was immediately transferred to the base hospital. During the night, he had six general convulsions, each lasting about two minutes. The blood pressure was systolic, 210; diastolic, 140. A general physical examination was negative. The following morning, 750 c.c. of blood was withdrawn from the left median basilic vein. Sweats, hot packs and diuretics were given, and the blood pressure was reduced to 160 systolic and 90 diastolic.

The first urinalysis showed, specific gravity, 1.015; albumin, ++++; urea, 0.688 gm to 100 c.c.; sodium chlorid, 0.09 gm. to 100 c.c. Microscopically, there were present pus, blood, coarse granular and epithelial casts in quantity.

A tentative diagnosis of chronic parenchymatous nephritis with uremia was made, and appropriate treatment was ordered.

December 20, the patient was rational, his general condition was improved, and he was able to give these additional facts to his history.

He had entered the army in 1917, apparently in perfect health, undergoing the usual examinations and receiving the usual vaccinations without bad results. His father and mother were living and well, and there was no history of

tuberculosis or cancer in the family. In early childhood he had had measles, chickenpox, whooping cough and grip. He was an abstainer from alcohol and tobacco, and denied venereal infection. Since entering the army, it had been necessary for him to get up once each night to void. Stooping brought on dizziness, and about one year ago, his sight suddenly became defective, but soon after improved. In spite of all these facts, he thought his health was perfect.

On becoming rational, it was found that his sight was defective, and I was called to see him, December 21.

Eye Examination.—The vision in each eye was for hand movements only. The external appearance was normal, except that the pupils were moderately dilated and reacted very sluggishly to light. The fundus of each eye showed an intense neuroretinal edema, with the outline of the disk completely obscured. The veins were markedly engorged and tortuous. The arteries were sclerotic, causing venous compression. There were many small flamelike hemorrhages and exudates in the inner retinal layers, especially placed at the temporal side of the disks involving the maculae.

There were short intervals of improvement in vision and the fundus picture along with his general improvement, but always with a return of the intense edema and increase in

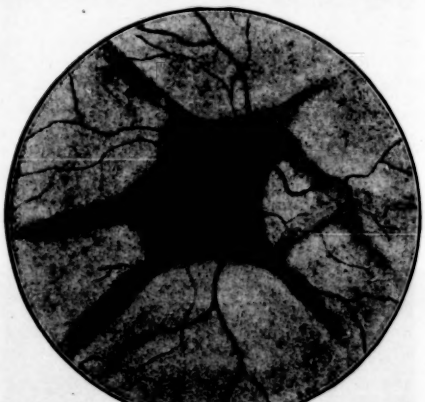

Fig. 2.—Charcoal drawing of the right fundus, illustrating the globular detachment of the retina.

the number of hemorrhages and exudates, until January 18 when a flat detachment was detected in the upper part of each retina. Two days later, multiple globular detachments were seen in each eye, extending far forward to such an extent that they could be detected by oblique illumination.

Heroic measures were adopted to save the life of this splendid soldier; but a complete suppression of urine occurred February 1 and he died February 6.

Necropsy.—The postmortem examination of the kidneys made by Dr. H. W. Nowell, then in charge of the laboratories, was: "The arcuate vessels, the vasa recta, and the efferent vessels of the glomeruli show in patches a thickening of the intima causing an encroachment on the lumen. The tubules are hypertrophied, and the epithelial cells show degenerate changes, and hyaline areas are present."

COMMENT

Whatever opinion one may have as to the relative frequency of retinal detachment in renal retinitis, and I believe it is generally regarded as an infrequent complication except in pregnancy, one should read carefully the original article by R. Foster Moore[1] on "The Retinal Detachment of Renal Retinitis." I believe he will be convinced then of the common frequency of this complication.

Many detachments are undiscovered because they occur in severe renal retinitis toward the end of the patient's life, when ophthalmoscopic examinations are not generally made. Again, globular detachments are usually situated peripherally and are not looked for, whereas the retinitis is centrally placed and readily seen.

As Moore's experience has been unusual since he studied the cases of nephritis in the wards of St. Bartholomew's Hospital, London, for a period of two years, I may be permitted to mention in part his deductions:

1. Nephritis in the absence of retinitis is not a cause of detachment.
2. The liability to detachment is largely proportioned to the severity of the retinal changes.
3. The occurrence of detachment is not related to the presence or absence of general edema.
4. The immediate cause of the detachment is an active subretinal exudate probably derived entirely from the retina.
5. In the event of recovery of the patient reattachment occurs with permanent visual and fundus defects.

Candler Building.

1. Moore, R. F.: Roy. Lond. Ophth. Hosp. Rep. **20**: 262, 1915.

THE CAUSES OF UNFAVORABLE SYMPTOMS FOLLOWING GASTRO-ENTEROSTOMY *

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This paper is based on the study of thirty-six patients on whom the operation of gastro-enterostomy has been performed. The study has been pursued for some years, the first report[1] having been made in 1913. Many of the patients have been studied several times, at intervals, during that period. Posterior gastrojejunostomy was the operation performed in every instance; in two the pylorus had been occluded by the surgeon; in two excision of the ulcer had been done. Twenty-two of the patients were clinically cured. Fourteen presented, for a longer or shorter period of time, symptoms which they ascribed either to the operation or to the original disease. They have been studied from the standpoint of the internist, not that of the surgeon, in an attempt to determine the causes of the symptoms and methods for their relief.

The title "unfavorable symptoms following gastro-enterostomy" has been chosen rather than "failure of gastro-enterostomy" because many of the symptoms depend on a situation arising out of the operation itself rather than the recurrence of the original disease, for which the operation was done.

Many misstatements have become current about the functions of the stomach after gastro-enterostomy.

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Outland, Skinner and Clendening: Surg., Gynec. & Obst. **17**: 175, 1913.

They have been made, very evidently, not as the result of actual study of cases, but as the result of theorizing about what ought to happen. Samples of such statements are that the operation does no good because the food continues to go out through the pylorus, that it fails because the food enters the

Fig. 1.—Barium meal coming out from the stoma, two weeks after gastro-enterostomy.

jejunum too rapidly, that it fails on account of the establishment of a vicious circle. Examination of actual cases serves to minimize the value of such considerations or to give them their proper emphasis.

Patients of this kind should be studied just as any other gastro-enterologic patient—by a careful review of the history, including, if possible, a study of the roentgenograms and laboratory findings made before operation; a general physical examination; a laboratory study of gastric contents and stool, and roentgenograms. In my experience the last gives the most information.

PHYSIOLOGY OF STOMACH AFTER GASTRO-ENTEROSTOMY

It is important to review briefly the physiology of the stomach after a gastro-enterostomy has been done.

1. *Motor Functions of the Stomach after Gastro-Enterostomy.*—The most important question under this heading is whether or not the food leaves the stomach by way of the pylorus or by way of the stoma. The work of Cannon and Blake [2] and of Leggett and Maury,[3] done on cats and dogs, tended to show that it left by way of the pylorus, even in the presence of a large, well-placed stoma. Largely on the basis of their work, Paterson [4] founded his "physiologic theory" of the way the operation of gastro-enterostomy cures an ulcer: e. g., the neutralization of gastric acidity, by the entrance of intestinal juices into the stomach through the stoma. The work of Cannon and Blake, and Legget and Maury, however, was done on four-footed animals without pyloric obstruction. In human beings, in my experience, the food always leaves the stomach by way of the stoma. It may leave by both the stoma and the pylorus. It may, in some cases, leave exclusively by the pylorus for a time, and in the same individual, examined later, leave partly by the pylorus and partly by the stoma. This is irrespective of whether the pylorus was obstructed at the time of the operation or not. In cases of high grade pyloric obstruction the stoma operates practically exclusively and continues to do so indefinitely. The oldest patient in my series was roentgenographed the last time twelve years after operation. The stoma was operating perfectly as an exit; the pylorus, not at all. At the time of operation he had a very considerable pyloric obstruction, and was emaciated to an astonishing degree. He has been observed many times in the interval; the clinical result is excellent. When roentgenographed, the stoma is always functioning; the pylorus has always remained closed. Except for one or two brief periods when he showed symptoms which seemed to point toward an obstruction of the distal loop of the jejunum, he has remained as well as can be.

But, while the stoma remains most constantly the only exit in the cases of the highest grade obstruction, it also operates as such in lesser grades. At the extreme other end of the line, we have observed two patients in whom there was no disease of the stomach

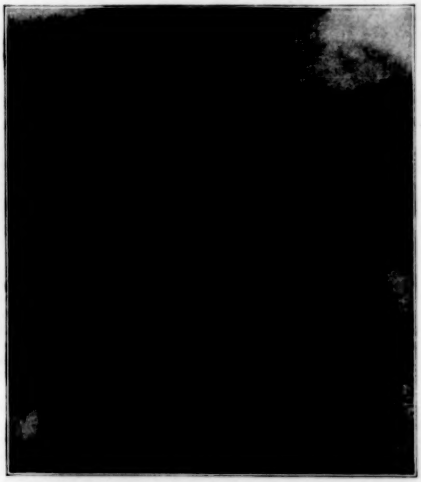

Fig. 2.—Barium meal leaving stomach by way of the stoma, two years after gastro-enterostomy. Note "heel" shape of stomach due to lateral issuance of meal. This is a favorable type of action of gastro-enterostomy.

whatsoever but on whom a gastro-enterostomy had been made. In spite of the fact that, in them, the pylorus was perfectly patent, and also that it did act as the main exit of the stomach, still there was always some food that passed through the stoma. The changed anatomy of the stomach seemed to make no

2. Cannon and Blake: Ann. Surg., 1905, No. 5.
3. Leggett and Maury: Ann. Surg. **46**, No. 4, 1903.
4. Paterson: Tr. Internat. Cong. Med., London, 1913.

difference in the patients' digestion or assimilation. They were perfectly comfortable and maintained their weight.

In the type of case in which there is not complete pyloric obstruction, not enough to cause vomiting, but in which there is atony of the gastric musculature, and

Fig. 3.—Eleven years after gastro-enterostomy. At operation the pylorus was completely blocked. Following the operation the patient gained rapidly in weight and has remained in good health and free from digestive symptoms ever since. Roentgenograms made at various times in the interval have shown the stoma always open and acting as the exclusive exit of the stomach.

a residue of stagnant secretion in the fasting stomach, gastro-enterostomy serves at first as a drainage operation. Observing these cases soon after operation, the stoma is doing a large part of the work, with the pylorus doing some. Later, in six months or a year, it will often be found that the pylorus is doing all or nearly all of it.

In one case which came under observation on several different occasions, we noticed a very interesting thing: Although ordinarily the food left largely by the pylorus, at times the ulcer would apparently become active, when the pylorus would shut down, and all food leave by the stoma. The pyloric area was thus effectively rested, and the acute stage of the ulcer shortened; for later the food was again leaving by the pylorus. It may be that gastro-enterostomy is a beneficial thing in these cases, even when high grade obstruction is not present.

Emptying Rate of the Gastro-Enterostomized Stomach: Some advocates[5] of pyloroplasty, and some critics of gastro-enterostomy are in the habit of stating that the defect of the gastro-enterostomized stomach is that the food rushes through without chymification and thus causes diarrhea and malnutrition. It may be well, therefore, to call attention to the actual figures on the subject. Unfortunately, we have not timed the emptying rate on all our twenty-two "normal" cases. We had previously records on six, however, which have been in print since 1913, and hence cannot have been influenced by recent criticism. In them the emptying rate was, respectively, one and one-half, two, three, three and one-half, two and one-half hours and one hour—an average of two and one-quarter hours, a minimum of one hour and a maximum of three and one-half hours. This, it is to be noted, is with a barium meal, of thin consistency; heavier meals would certainly remain longer. Chymification, as shown by recovered test meals, at the end of an hour is good.

2. *Secretory Functions of the Gastro-Enterostomized Stomach.*—The subject has been exhaustively studied by Smithies.[6] My own studies tend to show, in general, that secretion is diminished compared with the preoperative condition.

Our series of cases is much smaller than Smithies', and in general, agrees. We have, in two cases, however, been able to approach the subject from a slightly different angle. In these two cases we have studied the gastric contents at varying periods over a period of three and one-half years. Both showed a considerable reduction in acidity immediately after operation, and in both the acidity, while it varied greatly, tended to increase with time. This increase was coincident with a slower emptying rate of the stomach, and was

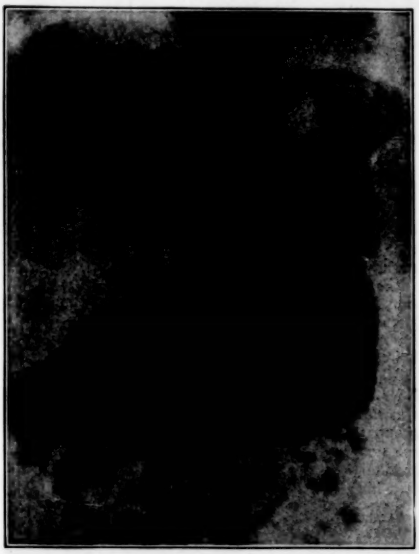

Fig. 4.—Both pylorus and stoma functioning a year after gastro-enterostomy.

greater when the pylorus began to function partially.

3. *Influence of Gastro-Enterostomy on Absorption and Nutrition.*—Cameron[7] and Carter[8] have made studies on this subject. The operation usually has

5. Davis, B. B.: Ann. Surg. **73**: 450 (April) 1921.

6. Smithies, F.: Surg., Gynec. & Obst. **26**: 275 (March) 1918.
7. Cameron: Brit. M. J. **1**: 144, 1908.
8. Carter, H. S.: Am. J. M. Sc. **154**: 851 (Dec.) 1917.

little influence or a favorable influence on nutrition. Especially if the pylorus has been previously obstructed, the patients gain markedly in weight. One in our series gained 45 pounds in a year, nearly a third of his total weight. One was decidedly overweight, so that we instituted a reduction cure. The weight is usually well maintained.

Fig. 5.—Same patient as in Figure 4. This plate, showing the stoma functioning almost exclusively, was taken at a different time from the preceding during a period of exacerbation of ulcer symptoms, and illustrates the manner in which the stoma acts at such times.

Carter states that soon after operation the fat absorption is low, but that this improves as time goes on. A case of his tested two years after operation showed a normal nitrogenous balance, fat absorption and carbohydrate utilization.

With this background we are in a position to consider those cases in which the result of the operation was not so happy. They have been divided into two groups: the immediate bad results, those in which the symptoms arose while the patient was still in the hospital; and the remote, in which the symptoms arose at a later time, or came on gradually.

CAUSES OF UNFAVORABLE SYMPTOMS FOLLOWING GASTRO-ENTEROSTOMY

1. *Immediate.*—(*a*) Obstruction of the distal loop on the jejunum. The symptoms are copious, watery vomiting, shock, and intoxication of the Draper type. The cause is usually herniation of the jejunum into the lesser peritoneal cavity through the opening in the mesentery. Moschowitz and Wilensky [9] have reported a case in which the jejunum was strangulated in the jejunal fold of the mesentery. The condition always calls for immediate early reoperation. The prognosis is bad. I have seen two such cases in consultation (they are not included in the tabulation of this series). Mayo [10] and Moynihan [11] report cases with chronic vomiting due to obstruction of the distal loop of jejunum—so-called vicious circle.

(*b*) Seepage, around the suture line. This must be a rare accident in experienced hands. The symptoms are reported as pain, elevated temperature, and local tenderness. The prognosis is good. I have never seen a case of this kind.

2. *Later Symptoms.*—Tabulated according to symptoms, the patients showed: hemorrhage, 8 cases; diarrhea, 6; fulness or discomfort after meals, 4; gaseous eructations, 3; vomiting, 1; nausea, 3; anorexia, 6, and discomfort before meals, 6 cases.

Considered under the headings of causes, so far as I have been able to determine them, they are:

(*a*) The formation of jejunal ulcers. One case in this series. There have been upward of 140 cases reported in the literature. As I have no new facts to add to those already recorded, I shall not discuss it.

(*b*) Recurrence of the ulcer—six cases. It often happens that a gastro-enterostomy is done for an ulcer, on the posterior wall of the stomach, which is still active. After the operation the symptoms persist—pain, hemorrhage, eructations and gas. This also happens in ulcers at the pylorus. Whether with or without cicatrization sufficient to cause obstruction, the ulcer is still active, and this activity persists. With the gastro-enterostomy made, however, the ulcer at the pylorus has a better chance to heal. These are the cases previously mentioned, in which the pylorus inter-

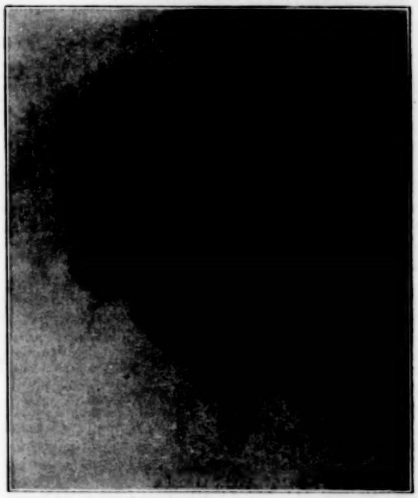

Fig. 6.—Patient with symptoms due to too large a stoma with consequent early emptying and dilatation of the jejunum.

9. Moschowitz and Wilensky: Surg., Gynec. & Obst. 21: 370, 1915.

10. Mayo: Ann. Surg. 36: 243, 1902.
11. Moynihan: Duodenal Ulcer, London, 1912.

mittently becomes blocked, and the stoma takes over the work, giving the pyloric area a rest.

One factor that predisposes to the recurrence in both cases is for the patient to believe that after operation he is suddenly well and may eat anything he likes. This leads us to:

Fig. 7.—Patient with symptoms due to too high implantation of the stoma. Roentgenogram taken immediately after ingestion of meal.

Lack of proper instruction before discharge from the surgeon. After gastro-enterostomy the patients should maintain a strict ambulatory ulcer diet for at least a year, and should report to an observer twice a year until it becomes evident that they are symptomatically well. Deviations from this simple rule are usual with surgeons. The patients go out and begin to eat everything to "test their new stomachs," as one of them put it. It is no wonder they soon come to grief. Many of them need to be restricted even to a liquid or soft diet for months after operation. Attention to their bowels is less frequently necessary.

Hemorrhage. This is not infrequent. Gross hemorrhage occurred in 6 per cent. of Smithies' unfavorable cases, and microscopic blood in 10 per cent. of all his cases. The treatment for it is the same as without operation. When present in the stool alone, jejunal ulcer must be remembered.

(*c*) Diarrhea—one case. The symptom occurs also in cases of too large stoma, described below. It has usually been ascribed to too rapid emptying of the stomach and the premature introduction of food into the intestines. Andrews and Mix [12] describe a case in which the stomach emptied in thirty seconds and was accompanied by cramping pain, tenderness in the abdomen and frequent explosive bowel movements. I have never seen a stomach empty this rapidly. In the case that I saw, it emptied in an hour; but there was rapid early emptying. In the fluoroscope the small intestine, and especially the large, were spastic and likely to cramp into segments and stay cramped. I have been inclined to ascribe the condition not so much to undigested food as to actual pus infection of the intestinal walls. The patient was made more comfortable by a very bland diet, by the recumbent position after meals, six small meals a day, and hydrochloric acid, though there are still periods of discomfort, and the bowels are very easily upset.

(*d*) Dilatation of jejunum from too large a stoma—four cases. Hertz [13] and Case [14] have independently called attention to this condition. It is well shown in Figure 6. The stoma, from being either too large or poorly placed, allows food to rush into the jejunum and distend it. The symptoms are a sense of fulness, amounting to actual pain, after meals. Hypersecretion was marked symptoms of one of my cases. This is paradoxical, but can be explained by the probability that the jejunum distends so much as to obstruct partially the distal loop by sagging. In this case the pylorus was occluded at a secondary operation, before I saw the patient.

The treatment is rest in the prone position, after meals, for from half an hour to an hour; and small, easily digested meals, at regular intervals. In the course of time the stoma may narrow and the symptoms clear up.

(*e*) Gastric stasis from too high implantation of the stoma—two cases.

In cases of atony of the stomach before operation, or of emaciation with gastroptosis, or both, the condition may persist after operation. If so, the stoma may come to be placed higher than the upper level of

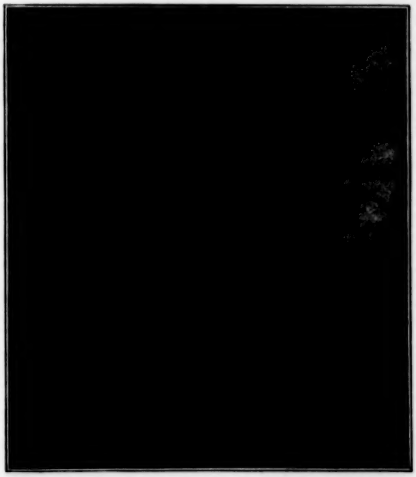

Fig. 8.—Same patient as in Figure 7. Roentgenogram taken six and one-half hours after Figure 7. Note residue not drained by stoma.

12. Andrews and Mix: S. Clinics, Chicago 4: 879 (Oct.) 1920.

13. Hertz: Ann. Surg. 58: 466, 1913.

14. Case, J. T.: Roentgen Studies After Gastric and Intestinal Operations, J. A. M. A. 65: 1628 (Nov. 6) 1915.

the food. There results a more or less severe grade of gastric stasis. The situation may easily be brought about by a too high implantation of the stoma. The surgeon operates on the patient in the horizontal position, when the low point of the stomach may be very different from the low point of the stomach in the vertical position. Murphy [15] reports one such case in which the pylorus was occluded at operation.

Whether brought about by the dropping of the stomach in atony or from the natural shifting in the vertical position, the result is the same. The food passes out of the stoma until the stoma is above the upper level of the food. Symptoms of anorexia, belching, discomfort after meals, etc., follow. The treatment is to assume the prone position after meals, when the stoma will be able to drain the stomach completely. Wearing an abdominal support is also useful. A dry diet, with small meals, and no fluid intake should be substituted. Under such a regimen the prognosis is good.

In both this condition and the former one of dilatation of the jejunum from too large a stoma, the situation is made worse in those cases in which the pylorus has also been occluded by the surgeon. If the surgeon is going to occlude the pylorus, he must be very sure his technic is good.

(*f*) Superimposed gastric disease—no cases in this series. Murphy, however, reports two bad results after gastro-enterostomy, one in which a carcinoma was implanted upon the old ulcer, and one in which syphilis, apparently, from the description, a tabes with gastric crises, developed after operation.

SUMMARY

Gastrojejunostomy is a satisfactory operation in proper cases, properly done. On account of its simplicity it is a good operation for the general surgeon to use as a routine. The most favorable cases are ulcers at the pylorus causing obstruction. The highest grade obstruction, other things being equal, will obtain the greatest relief, but lesser grades of obstruction will be benefited. The least favorable cases are indurated ulcers away from the pylorus. Unless the case has been improperly selected, or unless some error in technic occurs, the patients with gastro-enterostomy have, with few exceptions, little or no disturbance of digestion or nutrition. Occlusion of the pylorus, is, in my experience, a poor procedure.

The causes of late unfavorable symptoms following gastro-enterostomy are: (1) jejunal ulcer; (2) recurrence of the ulcer, particularly ulcers on the posterior wall of the stomach, or due to lack of dietary regulation after operation, or from other undetermined causes; (3) diarrhea, from too rapid exit of food or bacteria; (4) dilatation of the jejunum from too large a stoma; (5) gastric stasis from too high implantation of the stoma, and (6) superimposed gastric disease.

1325 Rialto Building.

15. Murphy: Am. J. Roentgenol., April, 1919.

Laboratory Science in Medicine.—A critical study of the history of the study of the typhoid problem from the dual viewpoints of theory and practice leads to an appreciation of how much the development of the laboratory sciences has meant in clinical medicine.—*Bull. Mass. Dept. Ment. Dis.* **4**:7 (Oct.) 1920.

DIAGNOSTIC AND THERAPEUTIC ASPECTS OF LATE SEQUELAE OF GASTRIC SURGERY

OBSERVATIONS BASED ON SIX THOUSAND, FOUR HUNDRED OPERATIONS FOR CHRONIC GASTRIC AND DUODENAL ULCERS *

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This article embodies, in the main, my experience and opinion with regard to factors contributing to the failure or success of the surgical treatment of patients with chronic benign ulcer of the stomach or of the duodenum. The subject was chosen partly because of a growing suspicion of physicians regarding the ultimate benefits derived from purely surgical interference, especially following gastro-enterostomy for uncomplicated juxtapyloric lesions, and partly in view of the diagnostic problems and the therapeutic considerations arising as the result of late sequelae.

A full consideration will not be given of the relative merits or indications for medical and surgical treatment, of the antagonistic views held by prominent internists with reference to the virtue of purely medical measures, or of the uncompromising attitude, and the occasion for it, of the majority of surgeons regarding nonsurgical therapeusis. It seems that these and numerous other causes for disagreement lie largely in the fact that our present knowledge concerning many fundamental factors of normal and morbid gastric physiology, and of the lesion itself, is incomplete. Besides, there is an absence of uniform standards of selection, judgment, and skill in the management of ulcer-bearing patients. To those intimate with the difficulties of our problem there is a feeling that we are passing through a transitional stage so far as the treatment of ulcer is concerned. While we appreciate the limitations of medical treatment, there has also been a growing dissatisfaction among surgeons with the results of their treatment. A study such as this, wherein we may see the factors that made not only for failure but also for success in the past, may perhaps serve the added purpose of evaluating any change or addition to our future therapeutic armamentarium.

As about 70 per cent. of all ulcers are duodenal, and about 65 per cent. of all gastric ulcers are at or near the pylorus and on the lesser curvature, posterior gastrojejunostomy, with or without cautery or knife excision, has been the usual operative procedure in the Mayo Clinic. Therefore, my observations and statistical review deal chiefly with this large group. In the discussion that follows, bearing on the causes for failure or incomplete relief after operation, the fact should not be lost sight of that, in our experience, as statistics will show, the end-results have been highly favorable. Failures after medical treatment are taken as a matter of fact, but failures after operation are often given undue prominence, a psychologic fact of considerable importance.

CHIEF REASONS FOR FAILURE

Immediate postoperative complications, while they may have an important bearing on later sequelae, do

*From the Section on Gastro-Enterology, Mayo Clinic.
* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

not come within the province of this paper. Patients under observation following unsuccessful surgical treatment may present a variety of symptoms, chiefly pain or distress, emesis, hemorrhage and intestinal disturbances. The underlying causes may be purely neurotic, or they may be due to functional derangement or to gross lesions. Moynihan,[1] whose experience has been very similar to that in the Mayo Clinic, gives the following as the chief reasons for failure:

1. The performance of gastro-enterostomy in the absence of a lesion intrinsic to the stomach or duodenum.

2. Faulty technic, which often gives rise to the symptoms of vicious circle, the result of obstruction of one of the jejunal limbs, especially the distal one, or the result of too small a stoma or too long a jejunal loop.

3. Lack of thoroughness in operating, such as neglecting to remove a diseased gallbladder or an appendix at the time of an otherwise successful operation, or to deal directly with an ulcer-bearing area when circumstances warrant it.

4. Formation of a new ulcer in the stomach or duodenum, at or beyond the stoma, and reactivation of the partially healed or unhealed ulcer, or carcinomatous changes in a gastric ulcer not removed at the primary operation. In these cases such sequelae give rise essentially to painful symptoms at variable periods after operation in which the complaint is often identical to the original. Similar distress may be provoked by extensive adhesions at the pylorus or by those involving the stomach and anterior abdominal wall, the result of repeated operations or undue manipulations.

CASE GROUPS

The patients who have come under our observation may be divided roughly into two groups:

Group 1.—Almost all of the patients in the first group had been operated on primarily elsewhere, and the cause of their recurring symptoms were usually due to (1) operation in the absence of a lesion, a technical error, or to a combination of both (about 200 gastro-enterostomies have been undone by surgeons in the Mayo Clinic, including a number of their own) or to (2) gastrojejunal or jejunal ulcer. Secondary operations for the removal of such lesions were performed in forty-four cases. These complications are more serious than the original lesion. In about one third of these cases there was no tangible evidence of a preexisting lesion.

The group of patients with recurring symptoms who had been operated on elsewhere represents the most difficult problem in diagnosis because of (1) invariable absence of authentic data concerning the operative findings, the details of operative procedure, and the degree of technical skill; (2) the possibility of the recurring symptoms being due to the original causes underlying the complaint, often nervous or reflex, especially in the absence of reliable preoperative clinical evidence for ulcer; (3) the roentgen-ray determination of postoperative complications made difficult because of the inevitable physical and functional changes incident to operative intervention (Carman[2]), and (4) subjective cures being found when laboratory examinations indicate a disturbed physiology, and the appearance of postoperative symptoms when the functions seem to be improving, or when they are within normal limits (Wilensky[3]). But if the postoperative state of the patient is worse than the preoperative, or, as is often the case, the postoperative symptoms are different and more urgent, common sense dictates secondary surgical intervention since the complication is invariably of a mechanical nature.

Group 2.—The patients in this group had demonstrable lesions of the gastroduodenal area which were found and corrected. Other lesions of the accessory digestive tract, when present and amenable to surgical interference, were removed by the surgeons.

SEQUELAE DEMANDING SECONDARY OPERATIONS

In our cases, failure to achieve cures made 228 secondary operations necessary out of a total of 6,402 operations of all types for chronic benign ulcer; there were 4,793 posterior gastrojejunostomies alone. The causes underlying the recurrence or continuation of painful symptoms have been mentioned. Reliable statistical data are not available with regard to the frequency of reactivated ulcer. It is reasonable to infer that the resumption of the original symptoms of variable severity, when associated with hyperacid gastric secretion and responding favorably to proper and adequate medical measures, are due to this factor. Especially is this true in the persistent absence of any definite clinical or roentgenologic evidence of a new ulcerative process.

Gastrojejunal or jejunal ulcer necessitated secondary operations in fifty-seven cases. Such sequelae are undoubtedly more frequent because in some instances the disturbance from the ulcer may not be sufficient to bring the patient back for treatment, or he may seek treatment elsewhere. In at least ten additional cases a conclusive diagnosis of such a lesion was made; four of these patients submitted to an intensive medical regimen.

OTHER CLINICAL AND DIAGNOSTIC DATA

Wright[4] has called attention to the preponderance of the male sex in cases of gastrojejunal and jejunal ulcer. Forty-nine of our fifty-seven patients were males and eight were females. In more than half the patients the pain was left-sided and lower than before the operation. Eighty-eight per cent. of the patients, including those who experienced no relief from the operation, had a recurrence of symptoms within one year following the operation. Other data of clinical interest and diagnostic importance have been emphasized in my study of eighty-three proved cases.[5] An accumulative experience has enabled my colleagues in roentgenology to detect the lesion with surprising frequency.

Judd[6] has recently reported the entire series of 101 cases of gastrojejunal ulcers observed at the Mayo Clinic. In these cases, eight of the lesions were distinctly jejunal in location.

1. Moynihan, B.: A Clinical Lecture on Disappointments after Gastro-Enterostomy, Brit. M. J. **2**: 33 (July 12) 1919.
2. Carman, R. D.: The Stomach After Operation: Roentgen Diagnosis of Diseases of the Alimentary Canal, Ed. 2, Philadelphia, W. B. Saunders Company, 1920, pp. 377-413.
3. Wilensky, A. O.: The Present Status of Gastric and Duodenal Ulcer, Ann. Surg. **73**: 420 (April) 1921
4. Wright, G.: Secondary Jejunal and Gastrojejunal Ulceration, Brit. J. Surg. **6**: 390 (Jan.) 1919.
5. Eusterman, G. B.: A Clinical Study of Eighty-Three Gastrojejunal Ulcers: Diagnosis Verified at Operation, Minnesota Med. **3**: 517 (Nov.) 1920.
6. Judd, E. S.: Jejunal Ulcers, Surg., Gynec. & Obst. **33**: 120 (Aug.) 1921.

The formation of a new ulcer at or near the site of the original ulcer was the occasion for a secondary operation in twenty-one patients. This occurrence is exclusive of the gastrojejunal group in which reactivation of the primary ulcer or the formation of a new ulcer was not uncommon. Again the male sex predominated, as only four of the patients were females. The period of relief following the first operation ranged from three months to eleven years, but 70 per cent. of the group had a recurrence of symptoms within an average period of one year and eight months. Three patients had no relief whatever. Twelve of the recurring ulcers were gastric; in seven cases, the original ulcer was gastric and, with one exception, excision alone, pyloroplasty, or sleeve resection had been performed originally. In the remaining five cases, there were concurrent lesions originally in the stomach and duodenum, and gastro-enterostomy with or without excision of the gastric ulcer was the original operation. In the nine instances of a new duodenal ulcer the original lesion was in the duodenum, and the primary operation in seven was excision, plastic operation, or simple enfolding. In the remaining two, a posterior gastrojejunostomy had been performed. The few new gastric ulcers that had apparently developed in the presence of a gastro-enterostomy admit of much speculation. The majority of recurring ulcers, of course, followed excision or pyloroplasty.

Carcinoma developing on benign gastric ulcer for which a previous gastro-enterostomy alone had been performed was found at secondary operation in twenty-three cases. This group represents an earlier series, for in more recent years the Balfour cautery or knife excision combined with gastro-enterostomy, pyloroplasty, or some form of resection is the routine procedure. In ten more recent instances, however, operation revealed carcinoma developing at or near the site of a former gastric ulcer in which surgical measures other than gastro-enterostomy were instituted originally.

In a total of 144 of 4,793 gastro-enterostomies, or in 3 per cent., for miscellaneous reasons besides those enumerated, a secondary operation was performed. In the remaining eighty-four, a secondary operation was undertaken, chiefly because of complications developing after excision or pyloroplasties for gastric ulcer, but the proportion of such primary operations to gastro-enterostomies was much smaller.

END-RESULTS

Graham,[7] in 1914, reported the surgical end-results in 600 cases of duodenal and gastric ulcers. There were 438 patients with duodenal ulcer, and 94 per cent. of 163 of these who had pyloric obstruction of variable degree at the time of operation were cured. Of the entire group, 88 per cent. were cured or satisfactorily improved. Since that time answers to questionnaires from 1,800 additional patients have been tabulated. The percentage of patients cured or greatly improved remains approximately the same in the two groups. As Balfour[8] has shown, the added routine procedure of cautery or knife excision, especially the former, has, among other procedures, almost nullified the possibility of postoperative hemorrhage, and the percentage of patients classified as improved has been much increased. In order to maintain these percentages the surgeon must continue to be conservative in accepting the young male adult with active gastric chemism and the psychoneurotic ulcer-bearing patient, if intensive medical management can be the alternative. Deaver[9] has recently reported a cure in 90 per cent., following operation for duodenal ulcer.

ADVANTAGES OF GASTRO-ENTEROSTOMY OVER PYLOROPLASTY

In view of such favorable end-results by almost purely surgical procedures and the fact that a secondary operation was necessary in only 228 cases of the 6,402, it is difficult to follow the logic of physicians who argue that gastro-enterostomy is inherently faulty. The average duration of symptoms in our ulcer-bearing patients was nine and one-half years, and such complicating factors as pyloric obstruction, recurring hemorrhage, and chronic perforation, singly or in combination, were present in 35 per cent. A leading American exponent of medical therapy in several personal communications has emphasized his conviction from repeated careful study that a properly performed gastro-enterostomy in the presence of a chronic indurated duodenal or pyloric ulcer is a splendid physiologic procedure. Total and free acidity in our cases is reduced from 40 to 60 per cent. following gastro-enterostomy. As C. H. Mayo[10] has said, this procedure permanently applies the principle of medical treatment, bringing about a change in the local environment, which invariably permits nature to heal the ulcer as well as to overcome symptoms. Carman, on repeated fluoroscopic examination at variable intervals after operation, has shown that (1) the stomach is usually smaller than before operation unless marked dilatation existed previously; (2) the stomach empties in considerably less time than the normal unoperated stomach, and (3) the opaque meal passes freely through the stoma, which does not tend to contract materially. Proponents of some form of pyloroplasty (Finney, Strauss, Horsley,[11] and Davis[12]) in preference to gastro-enterostomy have advanced some plausible arguments. The decision as to the best type of operation is a problem that the surgeons must solve, although an expression of opinion from the clinician may not be out of place. My experience with the end-results of several hundred well executed pyloroplasties, many performed under favorable circumstances, has not been encouraging. Recurrence of ulceration in the suture line, adhesions to adjacent viscera, induration, contraction and narrowing, which provoke faulty pyloric mechanism and serious functional disturbances, in the absence of adequate obvious cause, are occasional sequelae. My answer to the charge that gastro-enterostomy is an unphysiologic procedure is that at least 15 per cent. of all pyloroplasties eventually prepare a rich soil for a highly successful gastro-enterostomy. It is reasonable to believe, therefore, that time and an enlarged experience will temper the present laudable enthusiasm for pyloroplasty.

7. Graham, C.: Observations on Peptic Ulcer, Boston M. & S. J. **170**: 221, 1914.
8. Balfour, D. C.: Cautery Excision of Gastric Ulcer: Further Observations on the Value of the Method, Ann. Surg. **67**: 725 (June) 1918.
9. Deaver, J. B., and Reimann, S. P.: The Surgical Treatment and the Pathology of Gastric and Duodenal Ulcer, Surg., Gynec. & Obst. **32**: 103 (Feb.) 1921.
10. Mayo, C. H.: Gastric and Duodenal Ulcers, Ann. Surg. **73**: 328 (March) 1921.
11. Horsley, J. S.: A New Operation for Duodenal and Gastric Ulcer, J. A. M. A. **72**: 575 (Aug. 23) 1919.
12. Davis, B. B.: Comparative Results of Pyloroplasty and of Gastro-Enterostomy in Stomach Surgery, Ann. Surg. **73**: 450 (April) 1921.

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CONCLUSION

The nihilism with regard to therapeutics manifested by the surgeon in the past is not a flattering chapter in the annals of achievement in the domain of gastric surgery. In more recent years, this attitude has changed, as evidenced in the contributions of such representative surgeons as Mayo,[13] Judd, Wilensky and Davis. This attitude augurs well for surgery and for the patient. Medical management has been discredited, not because the principle is wrong, as the capacity for healing in ulcers is variable, but because the effort was inadequate and the cooperation of the patient was not sufficiently cultivated. Consistent medical management is often superior to poor surgery, and the mortality is practically nil. The prospect for cure following a successful operation has too frequently been forfeited through the gross dietetic indiscretions of the neglected patient. Many functional derangements of organs other than the stomach, often of major importance, that surgery cannot be expected to cure, require the cooperation of the internist for their alleviation. Bastedo [14] says bluntly that no longer shall we tolerate a surgeon who places a patient with an ulcer on a heavy and bulky diet within two or three weeks of his operation. All this emphasizes the necessity of friendly cooperation between the internist and the surgeon. Unquestionably, the best interests of the majority of ulcer-bearing patients are conserved by such combined efforts. In the Mayo Clinic, the surgeons leave to the clinicians the preoperative preparation and the details of the immediate and later postoperative dietetics, alkaline therapy, removal of foci of infection and regulation of the future life of the patient. It seems safe to predict that the pooling of all therapeutic resources will prevail over the present tendency of surgeons to institute newer or more radical measures in surgical technic for the cure or alleviation of a widely prevalent and increasing disease.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. CLENDENING AND EUSTERMAN

DR. B. W. SIPPY, Chicago: Gastro-enterostomy is of unquestioned value when successfully performed for pyloric obstruction that is unrelievable by less serious measures. After gastro-enterostomy, on giving a full meal of ordinary food and controlling the emptying time with a stomach tube, the stomach seldom empties itself appreciably earlier than the normal emptying time. Food and its accompanying digestive secretion are usually found from five to seven hours after each full meal. It must be remembered also that after gastro-enterostomy the stomach empties itself through the pyloric orifice, proportionate to the size of the opening through it. It is a mistake to assume that following gastro-enterostomy the alkaline secretions of the duodenum enter the stomach in sufficient quantity to neutralize the free hydrochloric acid that attends the clinical peptic ulcer. The free acidity is likely to be lowered somewhat, but not sufficiently to annul appreciably the digestive action of the gastric juice. In many cases unfavorable symptoms following gastro-enterostomy arise because the disease for which the operation was performed was not removed. For example, gastro-enterostomy alone is the most common surgical procedure performed for peptic ulcer. Unless a peptic ulcer is removed by excision or resection, the ulcer does not cease to exist without undergoing a healing process. The conditions for the healing of pyloric obstructive ulcer are not always sufficiently improved to permit the ulcer to heal. The digestive night secretion is usually controlled, but the ulcer continues to be exposed to irritating digestive gastric juice for a period of from nine to fifteen hours each day. The selection of cases for gastro-enterostomy should be very greatly influenced by the character of the medical and surgical service available. Pyloric obstruction due to peptic ulcer is relievable by accurate medical management in 85 per cent. of all cases. Since gastro-enterostomy is performed largely by those who aspire to imitate the skilled expert, the immediate bad results are the most serious. Only the highly skilled surgeon can regularly protect the patient from such immediate bad results as arise from leakage, hemorrhage, misplaced or undersized stomata, or regurgitant vomiting, due to too long or badly rotated, twisted or overdistended jejunal loops. Uncontrolled night secretion, unrelieved food retention and the development of jejunal ulcer are among the more common apparent conditions contributing to the remote bad results of gastro-enterostomy when performed for peptic ulcer.

DR. J. SHELTON HORSLEY, Richmond, Va.: So far as surgery is concerned, we can divide ulcers of the stomach and duodenum into two distinct types. In one, there is either stenosis or an ulcer with marked surrounding leukocytic infiltration at or near the pylorus. In cases of this type every one is agreed that gastro-enterostomy is the operation of choice, unless the stenosis is very narrow, when I think a pyloroplasty may be indicated. In the second type of ulcers there is a patent pylorus. It is in these cases that trouble follows after gastro-enterostomy. Explanation of this trouble may be found in the changed physiology which permits the dumping of the acid contents of the stomach into the jejunum, whose contents are normally always distinctly alkaline. Even in the Mayo Clinic, where the technic of gastro-enterostomy has reached its perfection and where absorbable sutures are used, there is a definite percentage of cases (usually about 2 or 3 per cent.) that develop gastrojejunal or jejunal ulcer. It seems probable that some of the cases of these ulcers escape observation, and it is even more probable that for every patient who has a frank jejunal ulcer, there are many more who have symptoms that are caused by the irritation and hyperemia from the acid gastric juice in the jejunum, and yet the irritation is not sufficient to produce an ulcer. When there is a permanent cicatricial closure of the pylorus, the gastric juice cannot gain exit there and the alkalinity of the duodenal contents is preserved and protects the stoma at the gastro-enterostomy from the acid; hence, in this type of cases gastro-enterostomy gives good results. The ulcer of the duodenum or stomach is probably originally caused by a streptococcic hematogenous infection; and, doubtless, numerous other lesions, such as cholecystitis, were produced at the same time. The ulcer, which is the surviving lesion, is frequently regarded as the sole lesion, but often there is an accompanying cholecystitis, which is flared up by a pyloroplasty and causes moderate adhesions and symptoms. Whenever a pyloroplasty is done, the gallbladder, if adherent or diseased, should also be removed, because the adhesions of the gallbladder after a pyloroplasty will transmit a pull, or tug, of the peristalsis and so produce pain; whereas, in gastro-enterostomy there is less peristalsis about the pylorus; consequently an infected or adherent gallbladder will not give as many symptoms as after a pyloroplasty, though the pathologic condition may be just as bad.

DR. C. S. BARNES, Philadelphia: Gastro-enterostomy is a question of what part of the country you visit. If you visit Baltimore and see Dr. Finney work, you feel that you want to do a Finney operation. If you go on to the West and see a gastro-enterostomy, you feel that you want to do a gastro-enterostomy. I have had case after case in which I did the Finney operation. You can dissect out the ulcer much more easily. It is a very simple operation to those who will take enough trouble to work it out. It has one disadvantage, that when the ulcer is on the posterior surface of the pylorus it is not as accessible as elsewhere. But even there the ulcer can be resected, and gastro-enterostomy should be done. I have practically no complaints after a

13. Mayo, W. J.: Chronic Duodenal Ulcer, J. A. M. A. **64**: 2036 (June 19) 1915.
14. Bastedo, W. A.: Determination of the Need of Surgery in Peptic Ulcer, with Remarks on Gastro-Enterostomy, Am. J. M. Sc. **160**: 491 (Oct.) 1920.

Finney operation because the duodenum is used to receive the contents of the stomach. The Finney operation is practically a gastro-jejunostomy except for the pyloroplasty.

DR. G. B. EUSTERMAN, Rochester, Minn.: The profession is indebted to Dr. Sippy for having developed a simple and quite effective method of medical management of ulcer-bearing individuals. In properly selected cases we employ his method, in slightly modified form, as a routine. The question of the relative merits of pyloroplasty and gastro-jejunostomy is a matter which the surgeons must thresh out. I have simply advanced a clinician's opinion based on the comparatively less favorable end-results of a considerable number of skilfully performed pyloroplasties.

OBSERVATIONS ON BACILLUS BOTULINUS INFECTION OF CANNED SPINACH *

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AND
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Several recent outbreaks of botulism due to the consumption of infected canned spinach [1] have aroused some discussion concerning the growth and toxin production by *Bacillus botulinus* in a food product of this type. Given an initial infection, is this organism able to multiply and produce its characteristic toxin readily or may the development in such a medium be retarded? Also, coincident with toxin formation, are any metabolic products formed which may be detected by a mere physical examination and thus enable one to judge the food as spoiled and unfit for consumption? Essentially, this becomes a question of whether the development of *B. botulinus* in canned spinach is accompanied by gas production with resultant bulging or "swelling" [2] of the can or the production of an offensive odor, so that the consumer may be protected by elimination of abnormal food containers. Several reports [1] which have been received by this bureau concerning these outbreaks of botulism have indicated that the spinach held responsible was apparently normal, while others have stated that the food was either open to suspicion or obviously unfit for consumption.

This paper presents the results of experiments which were designed to obtain a more definite knowledge of the development of *Bacillus botulinus* in canned spinach and also a summary of the examination of numerous samples of canned spinach procured in the open market or from dealers.

EXPERIMENTAL INOCULATION OF SPINACH WITH BACILLUS BOTULINUS

For this experiment, forty apparently normal cans of spinach were selected. This number was divided equally between two sizes of cans, a large one, Size 10, containing 6 pounds 4 ounces, and a small one, Size, 2½, containing 1 pound 14 ounces. Of the total number, twenty-four were inoculated, and the remainder held as uninoculated controls. For inoculation, a suspension of *Bacillus botulinus* spores was prepared by growing the culture for seven days at 37 C. in a 2 per cent. glucose beef infusion broth containing chopped meat, pipeting off the fluid above the meat and centrifugalizing. The sediment was taken up in sterile saline and the resultant suspension heated at 80 C. for fifteen minutes to destroy vegetative cells and toxin. The strain of *B. botulinus* employed for this purpose had been obtained from infected asparagus which was responsible for an outbreak of botulism at Boise, Idaho.[3]

An estimate of the number of viable spores inoculated into the cans was obtained by making a series of dilutions of the original suspension and transferring known amounts from each dilution to deep tubes of 2 per cent. dextrose beef infusion agar. After three or four days' incubation at 37 C., several tubes showing suitable distribution of colonies were counted. By this procedure, it was estimated that the inoculum given each can of spinach consisted of approximately 800,000 spores.

Inoculation was performed by piercing the cans with a sharp-pointed instrument and immediately introducing the spore suspension by means of a sterile capillary pipet. This was always thrust into the can to a depth of 2 or 3 inches, thereby placing the inoculum well into the center of the mass. Aseptic conditions were observed throughout the work. After inoculation, the cans were at once resoldered to give an air-tight seal and divided into two lots, which were held at 37 C. and at room temperature, respectively. As the cans were not heated to expel the air, this method of inoculation undoubtedly eliminated the decreased pressure in many of the cans and may account for the "springy" condition of some of the Size 2½ cans which were subsequently held at 37 C.

At various intervals after inoculation, several cans of each lot were opened and about 25 c.c. of the material removed for culture and feeding. To gain an idea of the relative toxicity of the spinach, two different quantities of the juice from each sample were fed to guinea-pigs. Cultural work involved the use of aerobic dextrose agar plates, dextrose infusion broth under oil, and dextrose deep agar tubes. The last were used to obtain an estimate of the number of organisms in the spinach juice and the procedure followed was similar to that described for the determination of the numbers in the inoculum, with the exception that the samples were not previously heated, so that here the figures represent the total of both vegetative and spore forms.

To check any relationship of the toxicity of the material to the physical condition of the can or of the spinach, the condition of the cans, i. e., whether "flat" or "swollen," and the odor and appearance of the spinach after opening the can were noted. The uninoculated cans which were used as controls were subjected to the same examination as were those which had received *B. botulinus*.

The development of *Bacillus botulinus* in canned spinach was found to be somewhat irregular, as shown in the accompanying tables. In only the large cans

* From the Bureau of Chemistry and the Bureau of Animal Industry, U. S. Department of Agriculture.

* The writers are indebted to Dr. Charles Thom for valuable criticism and suggestions throughout the course of this work.

1. Geiger, J. C.: Pub. Health Rep. **35**: 2858-2860 (Nov. 26) 1920; also, reports to Bureau of Chemistry from the central and western food and drug inspection districts.

2. The trade terms "flat," "springy" or "swelled' are used to designate the condition of the ends of the can. Normally, a can should be "flat" (slightly concave), owing to a decreased pressure within the can. The "springy" or "swelled" condition is caused by an increase in pressure resulting from gas production within the can. A springy can may also result from improper exhausting.

3. Thom, Charles; Edmondson, R. B., and Giltner, L. T.: Botulism from Canned Asparagus, J. A. M. A. **73**: 907-912 (Sept. 20) 1919.

which were held at 37 C. was a prompt and uniform response obtained (Table 1). Here, toxin formation and the production of gas, as evidenced by the swelled condition of the cans, proceeded rapidly. At room temperature, the response was considerably slower (Table 2), indeed, the material from several cans was found to be nontoxic, although toxic cultures of *B. botulinus* were obtained from these in every instance. In the Size 2½ cans, the ability to initiate growth was found to be quite irregular. Of five inoculated cans held at 37 C., only two were later found to be toxic. The one became swollen after a few days and the other between the second and third week after inoculation (Table 3). Among those held at room temperature, there was evidence of toxin formation in three out of a total of seven cans (Table 4).

The number of cans in which *B. botulinus* failed to develop might have been less if a longer interval had elapsed before examination. The purpose of opening a number of apparently normal cans at various intervals was to answer the question raised before, i. e., whether an apparently normal can would be toxic. One instance of this kind was found, for in Can 18 sufficient toxin had been formed to kill the animal which received the larger quantity of spinach juice.

In practically every case the nontoxic samples contained only small numbers of organisms per cubic centimeter of spinach juice; the toxic samples, on the other hand, while containing a larger number have exhibited great variation, the numbers ranging from 35,000 to 20,000,000 per cubic centimeter. As the material was not shaken or stirred before examination, an uneven distribution of organisms within the can may account for this difference. Dextrose agar plates have indicated the absence of aerobic organisms in all but two instances. These may represent either contamination at the time of inoculation of the can or perhaps dormant spores originally present in the spinach. In the examination of miscellaneous samples of spinach reported later in this paper, we have occasionally encountered members of the aerobic spore-bearing group of bacteria.

TABLE 1.—DEVELOPMENT OF BACILLUS BOTULINUS IN SIZE 10 CANS AT 37 C.*

Interval After Inoculation, Days	Can Number	Condition of Can †	Physical Examination of Spinach		Dextrose Agar Plates (Aerobic)	Recovery of B. botulinus	Numbers per C.c. of Spinach Juice	Guinea-Pig Feeding	
			Odor	Appearance				Amounts Fed, C.c.	Results
4	1	Hard swell	?‡	Normal	Sterile	+	.....	3.0	Dead within 18 hours
								0.5	Dead within 18 hours
	2	Springy	Normal	Normal	Sterile	+	.....	3.0	Remained well
								0.5	Remained well
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	3.0	Remained well
7	3	Hard swell	Bad	Normal	Sterile	+	50,000	0.5	Dead within 18 hours
	4	Hard swell	Bad	Normal	Sterile	+	112,000	0.5	Dead within 18 hours
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	5.0	Remained well
14	5	Hard swell	Bad	Slightly mushy	+ Spore-forming spreader	+	35,000	5.0	Dead within 18 hours
								0.5	Dead, about 48 hours
	6	Hard swell	Bad	Normal	Sterile	+	160,000	0.5	Dead within 18 hours
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	5.0	Remained well

* Inoculated with 800,000 spores of B. botulinus type A (Boise strain); controls uninoculated.
† After from three to four days of incubation, five of the six cans had become swollen; the other was a "springer."
‡ A slight difference in odor when compared with the normal cans is designated by the mark ? in this and in the following tables. If judged solely by the odor, these would undoubtedly be passed by the average consumer or by one unfamiliar with the product.

TABLE 2.—DEVELOPMENT OF BACILLUS BOTULINUS IN SIZE 10 CANS AT ROOM TEMPERATURE*

Interval After Inoculation, Days	Can Number	Condition of Can †	Physical Examination of Spinach		Dextrose Agar Plates (Aerobic)	Recovery of B. botulinus	Numbers per C.c. of Spinach Juice	Guinea-Pig Feeding	
			Odor	Appearance				Amounts Fed, C.c.	Results
7	7	Flat	Normal	Normal	Sterile	+	<100	5.0	Remained well
	8	Springy	Normal?	Normal	Sterile	+	3,000,000	5.0	Dead within 18 hours
								0.5	Dead within 18 hours
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	5.0	Remained well
14	9	Flat	?	Mushy	Sterile	+	300	5.0	Remained well
								0.5	Remained well
	10	Hard swell	?	Normal	Sterile	+	90,000	5.0	Dead within 18 hours
								0.5	Dead within 18 hours
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	5.0	Remained well
21	11	Hard swell	Sour	Mushy	Sterile	+	200,000	5.0	Dead within 18 hours
								0.5	Dead, about 18 hours
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	5.0	Remained well
35	12	Springy	Normal	Slightly mushy	Sterile	+	8,000,000	5.0	Dead within 18 hours
								0.5	Dead, about 18 hours
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	5.0	Remained well

* Inoculated with 800,000 spores of B. botulinus type A (Boise strain); temperature from 21 to 27 C., as determined by thermograph; controls uninoculated.
† After four days, all cans remained flat. At the seventh day, two had become "springy". Between the seventh and fourteenth day, one "springy" and one normal can developed into "hard swells." One can remained normal until between the fourth and fifth week after inoculation, when it became "springy."

EXAMINATION OF MISCELLANEOUS SAMPLES OF CANNED SPINACH

A total of 174 cans was examined bacteriologically. These were selected from various shipments believed to be connected with the botulism outbreaks and also from a number of other lots which were suspected of being imperfectly processed. Of the entire number, ninety-two were normal and eighty-two were either "swollen" or "springy." The contents of six of the eighty-two abnormal containers were found to be toxic when fed to guinea-pigs. One of these six cans presented a peculiar condition in that, while animals were regularly killed by feeding small amounts of the

spinach juice, cultures of *B. botulinus* could not be obtained. Even large amounts of the material introduced into flasks of liver broth or dextrose beef infusion broth with meat failed to yield toxic cultures. The various mediums used were carefully checked by the growth of known strains of *B. botulinus* in other lots of the same preparation. Protection experiments performed with the centrifugalized spinach juice against Types A and B [4] immune serums showed the toxin to be of the A type, for the animals receiving Type A antitoxin remained well while those receiving Type B died with symptoms typical of botulism. In our

Other than several miscellaneous observations, no determinations were made of the potency of the toxic spinach juice. Five c.c. quantities given by mouth to 250-300 gm. guinea-pigs usually produced a fatal result within twenty-four hours. A number of guinea-pigs were injected intraperitoneally with successive dilutions of centrifugalized spinach juice, with the result that 0.1 c.c. killed in less than eighteen hours, 0.01 c.c. in from about eighteen to twenty hours, and 0.001 c.c. in about thirty-six hours. The same experiment was performed with another sample of toxic spinach with similar results.

TABLE 3.—DEVELOPMENT OF BACILLUS BOTULINUS IN SIZE 2½ CANS AT 37 C.*

Interval After Inoculation, Days	Can Number	Condition of Can †	Physical Examination of Spinach: Odor	Physical Examination of Spinach: Appearance	Dextrose Agar Plates (Aerobic)	Recovery of B. botulinus	Numbers per C.c. of Spinach Juice	Guinea-Pig Feeding: Amounts Fed, C.c.	Guinea-Pig Feeding: Results
4	13	Hard swell	Bad	Normal	Sterile	+	.....	3.0	Dead within 18 hours
								0.5	Dead, about 18 hours
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	3.0	Remained well
7	14	Springy	Normal	Normal	+ 1,000 colonies per c.c.	+	160	5.0	Remained well
								0.5	Remained well
	15	Springy	Normal	Normal	Sterile	+	20,000	5.0	Remained well
								0.5	Remained well
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	5.0	Remained well
14	16	Flat	Normal	Normal	Sterile	+	50	5.0	Remained well
								0.5	Remained well
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	5.0	Remained well
21	17	Swell	?	Normal	Sterile	+	51,000	5.0	Dead within 18 hours
								0.5	Dead, about 18 hours
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	...	Remained well

* Inoculated with 800,000 spores of B. botulinus type A (Boise strain); controls uninoculated.
† At the fourth day, one can had become a "hard swell," two were "springy" and two were normal. By the seventh day one of the remaining normal cans became "springy." The one "springy" can which remained unopened gradually developed into a "swell" between the second and third week after inoculation.

TABLE 4.—DEVELOPMENT OF BACILLUS BOTULINUS IN SIZE 2½ CANS AT ROOM TEMPERATURE.*

Interval After Inoculation, Days	Can Number	Condition of Can †	Physical Examination of Spinach: Odor	Physical Examination of Spinach: Appearance	Dextrose Agar Plates (Aerobic)	Recovery of B. botulinus	Numbers per C.c. of Spinach Juice	Guinea-Pig Feeding: Amounts Fed, C.c.	Guinea-Pig Feeding: Results
4	18	Flat	Normal	Normal	Sterile	+	.....	3.0	24 hours, unaffected; 3 days, partial paralysis; 4 days, dead
								0.5	Remained well
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	3.0	Remained well
7	19	Flat	?	Normal	Sterile	+	1,800	5.0	Remained well
	20	Hard swell	Bad	Normal	Sterile	+	20,000,000	5.0	Dead, 18 hours
								0.5	Dead, 24 hours
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	5.0	Remained well
14	21	Flat	Normal	Normal	Sterile	+	2,100	5.0	Remained well
								0.5	Remained well
	22	Hard swell	Bad	Normal	Sterile	+	2,300,000	0.5	Dead within 18 hours
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	5.0	Remained well
21	23	Flat	Normal	Normal	Sterile	+	2,000	5.0	Remained well
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	5.0	Remained well
42	24	Flat	Normal	Normal	Sterile	+	130	5.0	Remained well
	Control	Flat	Normal	Normal	Sterile	Sterile	.....	5.0	Remained well

* Inoculated with 800,000 spores of B. botulinus type A (Boise strain) held at room temperature, from 21 to 27 C., as determined by thermograph; controls uninoculated.
† At the fourth day, two cans had become "springy," the remainder were normal. By the seventh day, these two "springy" cans had developed into "swells," while the remainder were still unchanged and were finally recorded as normal at the termination of the experiment (see cans No. 21, 23 and 24 above).

experience, this one instance has been unique in that we were able to demonstrate the presence of toxin of a specific type, but could not recover the organism in cultures. From the other five toxic cans, cultures of *B. botulinus* were obtained. In all of these cases, protection experiments with specific immune serums have shown the toxin to be of the A type. Since all of our protection tests were essentially similar, one only is given in detail (Table 5). Stains made from the toxic cultures obtained from these samples of spinach have shown in most cases the presence of one or more bacterial types, in addition to those typical of *B. botulinus*. In only one instance have these additional forms exhibited aerobic growth.

It should be noted that all of the six containers in which the presence of *Bacillus botulinus* or its toxin was demonstrated were abnormal. The ends of the cans were bulged outward and the trade term "hard swell" applied in every instance. Considerable pressure had developed, for on opening, the material spurted out. Without exception, the odor was bad. The physical appearance of the infected spinach was good generally, evidently *B. botulinus* is unable to disintegrate the plant tissue.

Of the entire eighty-two "swelled" or "springy" containers, viable micro-organisms were obtained from fifty-eight, while the remaining twenty-four, or 29.2 per cent., were found to be sterile. Numerous feeding experiments have demonstrated that, with the exception of the six cans which were found to contain

4. Burke, G. S.: Notes on Bacillus Botulinus, J. Bacteriol. 4: 555-565 (Sept.) 1919.

B. botulinus, these spoiled samples were harmless to guinea-pigs. A study of the types of organisms responsible for the spoilage has not been made. The majority of them refused to grow under aerobic conditions.

The flat or normal cans were found to be sterile, with three exceptions. An aerobic spore-bearing gram-positive bacillus was obtained from one and obligate anaerobes from the other two cans. These provoked no ill effects when fed to experimental animals.

COMMENT

One outstanding feature of the experimental inoculation of spinach has been the irregularity exhibited by *B. botulinus* in initiating development. In some instances, the organisms multiplied rapidly, while in others, there was no apparent increase in numbers, even after an interval of several weeks. Under conditions actually encountered in the industry, it is possible that the number of infected cans which showed subsequent development and spoilage would be less than in the experiment. The experimental inoculation was considerably greater than one would imagine to be the case in accidentally contaminated foodstuffs, and, furthermore, the inoculated spores were not subject to a prolonged heating such as has been shown by several investigators [5] to retard subsequent development.

TABLE 5.—PROTECTION EXPERIMENTS WITH SPECIFIC IMMUNE SERUMS *

Toxic Spinach Juice	Immune Serum	Result
1.0 c.c.	1.0 c.c. Type A	Lived
0.1 c.c.†	1.0 c.c. Type A	Lived
0.01 c.c.†	1.0 c.c. Type A	Lived
1.0 c.c.	1.0 c.c. Type B	Dead less than 24 hours
0.1 c.c.†	1.0 c.c. Type B	Dead, 24 hours
0.01 c.c.†	1.0 c.c. Type B	Dead, about 30 hours

* Centrifugalized spinach juice and serums given simultaneously by intraperitoneal injection to guinea-pigs.
† Volume made up to 1 c.c. with sterile saline solution.

Our experiments show that the multiplication of *B. botulinus* in canned spinach is accompanied by gas production as well as by the elaboration of its specific toxin. As previously noted in Table 4, one instance was encountered in which toxin formation had taken place to a certain extent, while gas production either had not occurred or was insufficient to produce any bulging of the can. Feeding infected material to susceptible animals, such as the guinea-pig, constitutes a delicate test for the presence of the toxin. On the other hand, a certain quantity of gas must be evolved before it is sufficient to overcome the decreased pressure within the can and to cause distortion. On this basis, it is reasonable to assume that during a certain early stage in the development of the organism a weak toxin may be found before bulging of the can, due to gas formation, is evidenced.

Should infected material make its way into the trade shortly after preparation, or perhaps be held at a low temperature, there is the possibility that an instance of this sort might be encountered by the consumer. In such a case, he would have no warning on which to discard the food. It is believed that such an occurrence would be infrequent. As already pointed out, all infected containers procured from the trade have been distinctly abnormal in regard both to the "swelled" appearance of the can and to the odor of the product. It is firmly believed, therefore, that a conscientious scrutiny of the food product would result in the detection of spoilage [6] and the elimination of such foodstuffs should prevent extensive outbreaks of botulism. It is a matter of record that on tracing back the shipments of spinach incriminated in several of the botulism outbreaks, our inspection reports show that extensive spoilage actually occurred and that these lots had been sorted over and salvaged several times. In one instance, 590 cases out of a total of 900 spoiled during shipment and were destroyed. From the standpoint of the public health any lot of food which has given evidence of extensive spoilage should be regarded as potentially dangerous.

As a criterion to enable one to recognize abnormal containers, the data at hand indicate that the condition of the can, that is, whether "springy" or "swelled" would be of more value than the odor or appearance of the spinach, since some of the toxic cans which were opened shortly after inoculation exhibited very little if any abnormal odor.

SUMMARY

Bacillus botulinus, Type A, is able to multiply and to produce its characteristic toxin in canned spinach, although the development of the organism in this food product was found to be somewhat irregular. In some instances, there was evidence of a rapid multiplication, while in others there was apparently neither growth nor toxin formation. In all of the latter cases, however, the organism was found to be viable.

A temperature of 37 C., as contrasted with room temperature, accelerated the development to a certain extent.

When multiplication had progressed readily, 0.5 c.c. of the spinach juice per os proved sufficient to kill guinea-pigs, usually within eighteen hours.

The growth of *B. botulinus* in canned spinach is accompanied by the evolution of gas as well as by the elaboration of the specific toxin. In only one instance had toxin formation advanced to such a stage as to produce a fatal result, while at the same time gas production either had not occurred or was insufficient to cause bulging of the can.

Of 174 samples of canned spinach taken from suspected lots, *B. botulinus* or its toxin was found in six. In every case, the organism was of the A type. These six toxic cans were all "hard swells," and when opened, the odor was distinctly offensive.

The destruction of foodstuffs deemed to be abnormal, either by appearance of the containers or by the odor, should prevent the greater number of the outbreaks of botulism. From the public health aspect of the problem, the last point is of especial importance.

5. Burke, G. S.: The Effect of Heat on the Spores of Bacillus Botulinus: Its Bearing on Home Canning Methods, J. A. M. A. **72**: 88-92 (Jan. 11) 1919. Weiss, Harry: The Heat Resistance of Spores with Special Reference to the Spores of B. Botulinus, J. Infect. Dis. **28**: 70-92 (Jan.) 1921.

6. This has been found to apply to other foodstuffs, such as canned peas, corn and salmon.

Remuneration of Hospital Pathologist.—From the pathologist's standpoint, the places where the salary or the total remuneration is commensurate with the ability, knowledge and training demanded, are notoriously few. In far too many, the pittance offered is more or less of an insult, in addition to being ridiculous. In others, while a fair salary is paid, a spirit of self-complacency arises from the fact, and, though the stream of pathologists ebbs and flows, the salary remains the same forever.—R. A. Kilduffe, *Hospital Progress* **3**:45, 1921.

SCHICK TEST AND ACTIVE IMMUNIZATION WITH DIPHTHERIA TOXIN-ANTITOXIN

OBSERVATIONS ON YOUNG ADULTS *

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The history of the efforts to control diphtheria furnishes an interesting chapter in the development of preventive medicine. It was thought when Loeffler, in 1884, proved the diphtheria bacillus to be the cause of diphtheria, that this disease would soon cease to exist. Again, in 1895, when diphtheria antitoxin first came into general use for treatment and immunization, it was believed that this disease would soon be eradicated. The death rate from diphtheria has been definitely reduced by the use of antitoxin; but there has been very little reduction in the last ten years. Further advances for controlling diphtheria have been made in the last few years by using the Schick test to determine those susceptible to diphtheria and subsequently immunizing them with the toxin-antitoxin mixture. Park [1] is quite certain that any child over 2 years of age showing a negative Schick test, when the test is properly made, is immune to diphtheria, probably for life. As revealed by subsequent Schick tests, Schroeder [2] has found that from 85 to 90 per cent. of those showing positive Schick reactions are immunized for a period of at least five years following the administration of the toxin-antitoxin mixture; but this does not hold true when infants under 6 months of age are given the toxin-antitoxin. The most extensive use of the Schick test and the subsequent immunization with toxin-antitoxin has been made by Zingher [3] and his associates of New York City, who have tested more than 52,000 schoolchildren and given toxin-antitoxin to those giving a positive reaction. Zingher does not consider it necessary to make the preliminary Schick test in children under 5 years of age, since most of them give a positive reaction and very few show any marked reaction from the toxin-antitoxin; but he advises giving the preliminary test to all children over 5 years of age, since many of these are immune, and rather severe reactions from toxin-antitoxin occur quite frequently in those above this age.

RESULTS OF SCHICK TEST ON NURSES

For several years, the Schick test has been made on all nurses entering the service at Durand Hospital. Those reacting positively have been immunized with diphtheria antitoxin. As their immunity disappeared, as shown by the Schick test, they were given more antitoxin. In this way the occurrence of diphtheria among the nurses has been almost entirely eliminated; but occasionally nurses have developed diphtheria, as their passive immunity has disappeared before new administration of antitoxin was carried out.

During the last year, the Schick test has been made on ninety-seven nurses, and sixty-five of these, or about 67 per cent., have shown a positive reaction. The test has also been made on forty medical students, and twenty-seven, or 66 per cent., have given positive results. This high percentage of positive reactions among adults may be due to the fact that the large proportion of those tested have come from small towns or country districts. Zingher [3] has found in New York that children from the homes of the more well-to-do give a much higher percentage of positive Schick reactions than those from homes of the poorer classes of population who live in closely crowded neighborhoods. The latter have probably developed immunity from repeated exposure to diphtheria bacilli.

In trying to keep the nurses immune by the use of antitoxin, it has been observed that the Schick reaction would often be negative from five to six weeks after the first injection; but after a second injection, the reaction would often become positive in from three to four weeks, and after a third injection, it was positive in from two to three weeks. It appears from this that the duration of immunity produced by antitoxin becomes shorter with repeated injections. It was after the later immunizations with antitoxin that diphtheria has occasionally developed.

IMMUNIZATION BY TOXIN-ANTITOXIN

Recently, the immunization of nurses and interns at the Durand Hospital has been attempted by the use of toxin-antitoxin. In this work, 1 c.c. of a toxin-antitoxin mixture, in which there was 85 per cent. of the L+ dose of toxin to each unit of antitoxin, was injected at weekly intervals until three injections had been given. All injections were made subcutaneously, in the lateral aspect of the middle of the arm. The reactions following the injections of toxin-antitoxin were all limited to a local reaction, except in a few cases in which there was a slight fever and slight general malaise. The severe local reactions occurred in those having a combined positive Schick reaction, and consisted of edema, hyperemia, and tenderness of the lower half of the arm, with some extension down on the forearm. In no instance was there any necrosis or abscess formation at the site of the injection.

CHANGES IN THE SCHICK REACTION FOLLOWING INJECTIONS OF TOXIN-ANTITOXIN AND ANTITOXIN

Treatment*	No.	No. with Positive Schick Reactions Three Months Later	No. with Negative Schick Reactions Three Months Later	Percentage Giving Negative Schick Reactions
Antitoxin given before injecting toxin-antitoxin	10	1	9	90
Antitoxin given after injecting toxin-antitoxin	10	4	6	60
Antitoxin given before and after toxin-antitoxin	3	2	1	33
No antitoxin given	8	0	8	100
Totals	31	7	24	77

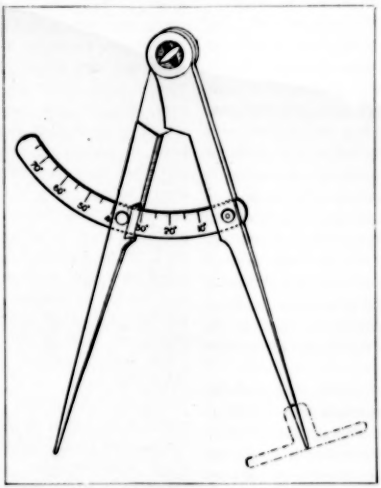
* The interval between the injections of antitoxin and toxin-antitoxin varied from two to twenty-nine days; but in most instances the interval was from three to ten days.

The effect of the administration of toxin-antitoxin to thirty-one young adults having positive Schick reactions has been studied over a sufficient length of time, three months or more, to permit the drawing of tentative conclusions. Of the thirty-one persons, seven have continued to have positive Schick reactions for three months or more following the injections of the toxin-antitoxin. In these seven persons, immunizing doses of antitoxin had been injected shortly before, or soon

* From the John McCormick Institute for Infectious Diseases.

1. Park, W. H.: Does a Negative Schick Test Indicate Present and Future Security from Diphtheria? Arch. Pediat. **38**: 329 (June) 1921.
2. Schroeder, M. C.: The Duration of the Immunity Conferred by the Use of Diphtheria Toxin-Antitoxin, Arch. Pediat. **38**: 368 (June) 1921.
3. Zingher, Abraham: Diphtheria Preventive Work in the Public Schools of New York City, J. Pediat. **38**: 336 (June) 1921.

after, the administration of the toxin-antitoxin. On the other hand, in every instance in which there was considerable tenderness and redness around the point of injection of the toxin-antitoxin, the Schick reaction has become negative. In many cases, the Schick reaction has become negative when there was very little local reaction. In three instances in which the control injection in the Schick test showed considerable reaction, which is known as the positive combined reaction, 0.2 to 0.5 c.c. of the toxin-antitoxin mixture was injected instead of 1 c.c. In each case, the Schick reaction became negative in one month after the last injection. In one of these cases, the Schick reaction was very marked, so that one-half the usual amount of toxin injected produced an area of redness and induration 3 cm. across, and the control area was about 1.5 cm. across. In this case, there was, following the first injection of 0.25 c.c. of the toxin-antitoxin in the lower lateral aspect of the arm, edema and hyperemia for a distance of 5 cm. on either side and above the point of injection and for about 7 cm. below. Following the second injection of 0.5 c.c. of the toxin-antitoxin, there was swelling and redness which nearly encircled the arm and extended to the elbow below and down the dorsal surface of the forearm for 10 cm. There was considerable local itching and also a rise of temperature of 1 degree. The third injection of 0.5 c.c. of toxin-antitoxin produced slightly less reaction than the second. In one instance, three injections of 1 c.c. of toxin-antitoxin on two different occasions, three months apart, failed to produce a negative Schick reaction within four months after the last injections of toxin-antitoxin. It may be stated, however, that immunizing doses of antitoxin were given, four days before the first injection, and two weeks after the last injection in the first series of injections of the toxin-antitoxin, and three times between the two series of injections of toxin-antitoxin. The table shows the effect that the injection of toxin-antitoxin has on the Schick reaction.



Outlet pelvimeter.

CONCLUSION

A large percentage of nurses and medical students of Chicago gave a positive Schick reaction. Approximately 75 per cent. of those who had a positive Schick reaction gave a negative reaction after injections of toxin-antitoxin. It appears that the injection of antitoxin soon after the administration of toxin-antitoxin interfered somewhat with the effect of the latter. Severe reactions to injections of toxin-antitoxin in hypersensitive persons or those having a combined positive Schick reaction may be avoided by injecting smaller amounts and yet an immunity may be developed.

Clinical Notes, Suggestions, and New Instruments

CRIMPED PAPER CUPS FOR EMBEDDING

McIVER WOODY, M.D., DALLAS, TEXAS
Dean, Baylor University College of Medicine

Bon-bon cups of crimped paper make ideal molds for either paraffin or celloidin embedding. They are stamped out in nests of twenty-five by machines, and they can be bought at any candy factory for little more than the cost of the paper that goes to make them.

Their flexibility allows them to contract with the embedding material, and tends to prevent the formation of the depression usually seen. However, they will spread on being filled, unless a cage is used. This is easily made by soldering one or two stout wires across the under side of a brass curtain ring. The wires keep the cup from slipping through, and the ring supports its sides.

For paraffin work, the cup and the cage are put in a dish of cold water. The cage falls to the bottom and the cup floats free, the paraffin hardening so rapidly that crystallization and brittleness are prevented.

For celloidin work, the cup is filled with thick celloidin, the specimen is transferred to it from thin celloidin, and the cup in its cage is set on a glass plate, and covered with a tumbler so as to provide a certain amount of ventilation. Evaporation takes place from the top, bottom and sides of the cup, and the celloidin hardens uniformly around the specimen. When the proper consistency is attained, the paper is torn off, and the block trimmed and mounted.

OUTLET PELVIMETER

M. PIERCE RUCKER, M.D.,
RICHMOND, VA.

Outlet pelvimetry is the most important part of pelvimetry certainly for the general practitioner. Not only is the funnel pelvis the most common deformity found in private practice, but there is no way of detecting such a deformity clinically until late in labor. The engagement of the head is a good test that the inlet of the pelvis is of sufficient size; but if one waits to apply the same test to the outlet, and the outlet proves too small, the patient is then worn out with suffering and is a poor surgical risk.

The usual measurements taken of the outlet are: transverse (between the tubera ischii), anteroposterior, anterior sagittal, and posterior sagittal of Klein. In addition to these it is usual to outline the pubic arch with the fingers, and note one's judgment of the angle the rami make with one another, in such terms as narrow, broad or normal. In order to do away with such indefinite terms for describing the pubic arch, I have devised an instrument, a modification of the ordinary carpenter's dividers, with which this angle can be measured in degrees of a circle. The method of operation is very simple. The arms of the dividers, or pelvimeter, are superimposed on the descending rami, and the result is read on the scale. The reverse is graduated in centimeters so that, with the detachable swiveled bar, one can make the usual measurements of the outlet of the pelvis with the same instrument.

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SATURDAY, OCTOBER 15, 1921

THE SYMPTOMATIC TREATMENT OF PNEUMONIA

The article in this issue by Means and Barach on the symptomatic treatment of pneumonia is worthy of special notice. The authors, who are men of both laboratory and hospital training, state frankly that there is as yet no serum, vaccine or, in fact, any remedial agent that can be regarded as a dependable specific in this disease. Too often the practitioner, influenced by the optimistic conclusions of some preliminary report that has on it the stamp of a well known laboratory or hospital, regards the question as settled. Or, still worse, he takes at par the shrewdly worded advertisements of commercial promoters of such agents with their garbled quotations, and prescribes the drug, vaccine or serum with the confidence that he is using a remedy whose specific virtues have been clearly proved.

Drs. Means and Barach also recognize that until the day of specific treatment of pneumonia arrives, symptomatic treatment is permissible and advisable. But, and this is the important fact, they refer to symptomatic treatment that is based on a knowledge of the way in which the normal working of physiologic laws is perverted by this disease, that is, they insist on a rational therapy. Here again the general practitioner may profit by reading their views—surely he will not be dismayed by an occasional technical term, formidable largely because new, or by a diagram or a chemical reference not understood at first glance. He will find that the conclusions are easy to grasp, simple of application, and he may feel assured that they are reached by the methods of science. The plea for more rational symptomatic and less haphazard empiric therapy is an excellent one. While the writers are discussing only two phases of treatment of pneumonia, the physician will find that they approve as scientific what he has so often used, the occasional life saving dose of morphin or digitalis, or the helpful cathartic. He will, however, find no support for the unnecessary and routine treatment of every insignificant symptom by one or many drugs. He will note, we trust, that emphasis is laid on the harmlessness of the use of oxygen and the alkali recommended. How many times have physicians been guilty of giving drugs which are not harmless, or dosages of dangerous size or combinations whose chemical resultants in the stomach or blood were utterly unknown and perhaps far from harmless.

This plea for a simple, harmless, rational treatment of pneumonia cannot be made too urgent. But, after all, we must admit that however scientifically and carefully these conclusions may have been reached, the crucial test will be made by the practitioner. Will oxygen or alkali save life in pneumonia or help to save life? We feel sure that in many thousands of cases of pneumonia and by many hundreds or even thousands of physicians, oxygen has been freely given. It appears, also, that the verdict of nearly all of these physicians would be that oxygen has little value in pneumonia, except as a suggestive measure. Perhaps it has not been properly administered, or a retrial with more critical observation would alter the opinion of many who are now skeptical. As to the alkalis, many who have given them in pneumonia state that there has been no perceptible benefit; but, on the other hand, still other physicians believe that alkalis are of unquestioned value. Only in the laboratory of general practice will these questions be finally answered. But the problems must be solved by no careless or prejudiced trial, by no personal opinion. The practitioner can reach warranted conclusions just as well as the laboratory worker or hospital physician, if he will train himself to habits of as careful and controlled observation and to as accurate recording and analysis of facts. Then, indeed, will his conclusions be worthy of consideration as a contribution to scientific medicine. These two symptomatic remedies are worthy of trial or retrial at the hands of careful practitioners. To repeat, and quoting from Means and Barach, these measures—alkali administration and oxygen administration—"must be carefully and intelligently controlled."

WHY EAT RAISINS?

A recent issue of The Journal [1] called attention to the current extravagance, if it may be so designated, of advertising which is intended to secure increased use of a variety of articles of food. So far as this procedure aims to call attention to the dietary value or culinary excellence of special brands of products or to types of less well known edible substances, there is in general little occasion for criticism. Even the ancients lauded their specialties; and there can be no harm in announcing the availability of choice citrus fruits or particularly palatable and wholesome ready-to-eat cereals or either a novel or staple dietary article which has been made purchasable in some unusually acceptable or sanitary form. Foods, like

1. "Eat-More" Campaigns, Current Comment, J. A. M. A. 77: 1109 (Oct. 1) 1921.

clothes and soaps and kitchen utensils, have legitimate advertising virtues. When, however, the promotor attempts to foist alleged unique qualities of his pet product indiscriminately upon the public under claims of specific therapeutic or health-promoting potency, the medical profession is warranted in giving critical consideration to the subject.

Within the last few weeks, raisins have been lauded in the advertising columns as "the iron food for vitality." The "food iron" of this dried fruit is represented as the "true beauty food" with which to regale the "pale, tired women," etc., etc. The reader is further told in some of the statements that "physicians know that value of the raisin." This fruit, which most persons know as a delicious morsel usually eaten by those who enjoy it for the sake of its palatability, thus is at once put into a class with Nuxated Iron, Ironized Yeast, and other familiar "tonics." What are some of the known facts, as distinguished from advertising fictions, about raisins? According to the analyses compiled by Sherman,[2] raisins with an iron content of 0.002 per cent. of the edible portion represent no superiority over many of the commonest cereals which enter into the daily diet. Some of the edible nuts have even better claim to distinction as "iron foods." The legumes which we consume as peas and beans are far richer in iron than are raisins, in contrast to which, further, spinach and meat and eggs would present an enviable iron record. Why cite more data? Indeed, one might well ask: "Why raisins?"

Even if the presence of an "average" amount of iron in raisins be admitted at the outset, there is no evidence that raisin-iron is absorbed better than the iron in other staples of every-day diet, if, indeed, it is absorbed to any extent whatever. Sherman has observed that, in healthy persons in whom the intake and output of iron have been determined, the requirement appears to have varied with individuals and the nature of the diet from 6 to 16 mg. of iron per man daily. He concludes from these results that a daily allowance of from 10 to 12 mg. of food iron should suffice for the maintenance of iron equilibrium in an average man under favorable conditions; but until the conditions which determine a larger metabolism of iron are more clearly defined, it would seem desirable to set a higher standard, perhaps 15 mg. of food iron per man daily. One hundred grams (more than three ounces) of raisins would furnish at most about 2 mg. of iron, even on the unlikely assumption that the element is completely rendered available in the digestion of a semidigestible fruit of this type. Thus the mathematics of diet sometimes tells important truths.

The raisin propaganda further tells the public, i. e., everybody, that "you'll want this food every morning." Such statements may work positive harm. There are, as every physician and many laymen know, persons whose alimentary tracts cannot at all times endure the ingestion of fruits which furnish a considerable amount of indigestible residue. The medical profession, as the guardian of the public health, must resent dietotherapeutic advice that may be detrimental to unsuspecting patients who are publicly assured that "the physician knows the value of raisins." Let us hope that the raisin may continue to bring joy to the palate in the future as—unheralded—it has in the past. Our quarrel is not with a wholesome food, but with unwarranted, unwise and misleading advice.

2. Sherman, H. C.: Chemistry of Food and Nutrition, Ed. 2, New York, the Macmillan Company, 1918.

THE SECRETION OF THE PYLORIC REGION OF THE STOMACH

There are various reasons why the physiology of the pyloric region of the stomach has a peculiar importance in connection with gastric problems. There is a marked difference between the character of the cells in the mucosa of the pylorus and the fundus, the so-called parietal cells being found only in the latter area. Since the classic investigations of the German physiologist Heidenhain, it has been widely taught that the secretion from the pyloric mucosa is alkaline, in contrast with the unique acid discharge that characterizes the function of the other portions of the gastric membrane. This view has not remained unchallenged, various writers asserting that the differing nature of the fluid found in the pyloric region must be ascribed to injury or atrophy of the mucosa in consequence of experimental manipulation. Whether enzymes of any sort are present in the secretion of the pyloric mucosa has also been debated in view of the conflicting statements on record.

Since the pyloric part of the stomach represents a location where pathologic conditions are prone to arise somewhat more readily than in other parts of the stomach, it is of more than academic interest to have precise information respecting its function. The experimental studies of Ivy and Oyama[1] seem to have solved most of the vexed questions. These investigators have conducted their observations on dogs in which the pyloric portion of the stomach was isolated as a pouch with or without nerve supply intact, much after the fashion of the well known studies of Pawlow on the fundal region. There is no reason for assuming that any permanent damage or deterioration of the sequestered membranes occurred.

The facts ascertained by Ivy and Oyama substantiate the conclusions which Bensley had reached earlier from a histologic study of the cells of the mucosa of the pyloric antrum that "the secretion of the pyloric glands is simply mucus." It is described more specifically as viscous, tenacious, transparent, odorless and slightly salty in taste. In appearance and consistency it is best compared with egg white. Unlike what

1. Ivy, A. C., and Oyama, Y.: Studies on the Secretion of the Pars Pylorica Gastri, Am. J. Physiol. 57:51 (Aug.) 1921.

obtains in the fundus of the stomach, the rate of formation of secretion in the pyloric region is not increased by meals, water drinking or secretagogues. Acids and irritants, when applied to the mucous membrane, excite the formation of the secretion. The secretion is alkaline, with an average hydrogen ion concentration represented by p_H 7.00 to 7.50. With the further statement that the pyloric secretion does not contain substances of specific digestive importance, whether enzymes, secretagogues or antiferments, the distinctive character of the fluid poured into the stomach in the neighborhood of the pyloric sphincter becomes further apparent.

WHAT IS PROGRESS IN OBSTETRICS?

As one reads obstetric textbooks, ancient or modern, one finds repeated again and again the caution to regard normal labor as a physiologic function and to consider interference only in the presence of definite pathologic indications. Recently, however, there has seemed to be a change in the way of radical interference even in normal labor. Obstetricians in this country appear to be alining themselves definitely into two camps—conservatives and radicals. At the last session of the American Gynecological Society, opportunity was given for a statement of the platforms supported by the opposing parties.

Dr. Rudolph W. Holmes [1] took the position that the indiscriminate employment of operative intervention in obstetrics has accomplished little in the way of conservation of life of either the mother or the child. He deprecated the ruthless operative course in all parturient women as a solution for the troubles incident to the hazards of birth. He pointed out that very little has been contributed in the last forty years to the art of obstetrics. The old masters developed a nicety of technic in the handling of labors which was a guarantee of excellent outcome in the large majority of instances, but the death rates from eclampsia and placenta praevia as complications seem to have been reduced little if at all. Recalling the fiasco of the twilight sleep furore and the dangerous results from thoughtless laudation of the reputed harmless virtues of pituitary solution, Dr. Holmes emphasized that the basic error which has crept into the obstetric field is the belief that pregnancy and labor are pathologic conditions and that child-bearing is a disease which must be terminated by some spectacular procedure. His criticisms are not addressed to the general practitioner but to the reputed leaders in obstetrics who sponsor intervention during labor. "No one," he said, "is doing so much of this needless operative interference as many of our reputed leaders, and they know not the wreck they have wrought for they hear only the encomiums of their fallacious representations and their misapplied skill. . .. . The general polemic that labor is a species of the torture of the inquisition has been advanced so frequently that many defend most drastic interferences on the score of saving women this horror—that the dread on the part of women of this frightful agony warrants any and all kinds of expedients to relieve them of the various stages of labor, when, in fact, too often these strictures are merely the shibboleths of those who would operate with little or no provocation." Among the practices which Dr. Holmes condemns are the routine shortening of the first stage by introduction of a bag, the slashing of the parturient canal when dilatation is completed, the routine practice of version, the extraordinarily large number of cesarean operations, and, finally, the practically invariable application of forceps merely to hasten delivery. Meddlesome midwifery has developed from minor transgressions to major surgery. So much for the views of the conservatives.

In the discussion, members of the opposite camp stated their points of view. The proponent of version, Dr. I. W. Potter, opposed to the induction of labor and the use of bags, argued that his method was less painful, and resulted in fewer complications and in a lowered maternal and fetal mortality. The proponent of prophylactic forceps, Dr. J. B. De Lee, considering pituitary solution a criminal agent if applied before the delivery of the child, stated his belief that women are even ready to undergo the increased risk of cesarean section to avoid the perils and pain of even ordinary labor. He claimed that the powers of natural labor are dangerous and destructive in many instances to both mother and child. He combines his frequent application of forceps with episiotomy in many cases. He has, however, no sympathy for Potter's podalic version, stating that the published results as to mortality condemn the method. Other obstetricians presented pleas for special methods, or cited arguments for or against the methods already mentioned.

In determining where the truth lies, the application of common sense and ordinary logic will yield a solution as readily in this as in any other scientific problem. Through years of experience, the medical profession has learned and is continuing to experience in practice that the ways of Nature are best, that while there is a tendency to the destruction of life there is a far greater tendency toward its conservation, and that a middle course is practically always the correct one. There can be no application of routine methods with efficient results. Our greatest leaders have ever appreciated that individualization of the patients is the sine qua non of success. Give Nature her opportunity in every normal patient, and interfere only in the presence of pathologic conditions representing actual indication for intervention; this has been a true principle of medical practice in the past, and it is true today.

1. Holmes, R. W.: The Fads and Fancies of Obstetrics, Am. J. Obst. & Gynec. 2:225 (Sept.) 1921.

Current Comment

THE BLOOD PRESSURE—A LAYMAN'S VIEWS

Our esteemed contemporary, the *Literary Digest*, conducts among other departments one headed "Science and Invention" in which from time to time such matters medical as may interest the public are digested and elucidated. The selection of periodicals there abstracted appears usually to be a matter of careful choice. However, anybody's foot may slip once in a while; and when the *Digest* decided to present an abstract of an article by Robert H. Moulton which appeared first in the *Forecast*, it not only slipped but came to a completely prostrate posture. Among other peculiar fallacies which the *Digest* aids in promulgating is the statement that "there has been no device to measure the blood pressure accurately until very lately." Quoting Mr. Moulton, the *Digest* then proceeds to describe such an apparatus, informing the reader that "the air bag is strapped on the subject's arm over the femoral artery," the patient apparently being in the hand-toe position in order to achieve this extraordinary anatomic configuration. Among the diseases which it is alleged high blood pressure may produce is the omnipresent diabetes. The *Digest's* editor, in preparing his abstract, frequently states that "Mr. Moulton goes on," and "Mr. Moulton goes on." One is inclined to exclaim: "Why, Mr. Moulton, how you *do* go on!" There is no fear, of course, that the readers of our own highly erudite and scientific columns will be misled by Mr. Moulton's vagaries; as evidence, a baker's dozen or so have already clipped the page from the *Digest* and sent it to the Tonics and Sedatives department. But what about the poor deluded layman?

IS CATALASE A MEASURE OF METABOLIC ACTIVITY?

The blood and extracts of various tissues of the body readily bring about a decomposition of hydrogen peroxid with the liberation of oxygen. This action has been attributed to the presence of an enzyme to which the name catalase has been applied. What physiologic function, if any, such an enzyme may have in the organism is by no means apparent. No one contends that peroxids are widely distributed in animal tissues. Nevertheless, a few years ago a tendency became apparent in scientific literature to associate tissue catalase in some way with physiologic oxidations. As metabolism depends on these in ultimate analysis, the content of catalase present in tissues has been interpreted by some as an index or measure of the vigor and intensity of life processes. The most extreme applications of this hypothesis have been attempted in this country by Burge, who has, to quote a recent writer, offered the possible connection between catalase and functional activity as an easy and ready explanation of nearly every problem in the field of biology. The untenability of the much quoted claims of Burge has already been dealt with in THE JOURNAL. They have been attacked from the standpoint both of the inadequacy of the experimental technic on which they were based and of the actual facts of comparative investigations. It would seem futile to refer further to Burge's hypothesis that physiologic function is paralleled by catalase activity in the body except for the circumstance that some textbook writers and medical workers still accept and transmit the alluring claims.[1] The newest critic is Morgulis[2] of the University of Nebraska College of Medicine. His crucial experiments have consisted in exposing frogs to widely different temperatures which it is well known can effect a change of from 300 to 400 per cent. in the metabolic rate of this species. No corresponding influence on their catalase content could be detected by carefully controlled quantitative methods. One cannot escape Morgulis' conclusion, now, that whatever the function of catalase in the organism may be, it is not a measure of metabolic activity.

A PLEA FOR THE METRIC SYSTEM

For years the problem of introducing the metric system into general use in this country has occupied the interest of physicians as well as of other scientists. This system is today employed in all the civilized world except Great Britain and her colonies, Russia and the United States. Even Russia, before the outbreak of the war, calculated all her imports according to the metric system. The present time seems to be distinctly opportune for a renewed agitation in the United States for adopting the system. Two million American soldiers received some instruction in its use during their sojourn in France; many of our industrial plants became familiar with the metric scale through work on war material designated for shipment abroad, and the wiping out of international borders is today more closely realized than ever before in the world's history. At its last meeting, a committee of the American Chemical Society recommended the general adoption of the metric scale and requested that chemists hereafter order all supplies in metric quantities. A resolution favoring the method was introduced into the House of Delegates of the American Medical Association, at the Boston session. As one hears of the numerous organizations cited as being wholly favorable to discarding the old methods and to replacing them by the metric, one wonders how it is that the change has not long since been made. The medical profession should take the lead and not follow in this reform. If it is to do this, the first step must be education of the young men. Teachers in medical colleges should teach in terms of the metric system and talk in terms of the metric system at the bedside as well as in the lecture room. To stop at this, however, would be slow work. It is necessary that medical journals, too, should feel their responsibility in this matter. If authors who submit manuscripts do not give measurements in metric terms, the periodicals may aid the movement by making the necessary transposition.[3]

1. Compare, for example, Howell, W. H.: Textbook of Physiology, Ed. 7, Philadelphia, W. B. Saunders Company, 1919, p. 977.

2. Morgulis, S.: Is Catalase a Measure of Metabolic Activity? Am. J. Physiol. **57**: 125 (Aug.) 1921.

3. In articles published in this and in other periodicals issued by the American Medical Association, both systems are given, the one supplied by our manuscript editing department being in parentheses.

Association News

THE ST. LOUIS SESSION

Organization of the Local Committee of Arrangements

The Local Committee of Arrangements for the Annual Session to be held in St. Louis, May 22-26, 1922, has been organized as follows: chairman, Robert E. Schlueter; secretary, John W. Stewart; treasurer, Malcolm A. Bliss; together with the chairmen of the subcommittees: on Finance, Frederick C. Simon; on Hotels, Louis H. Behrens; on Commercial Exhibit, Lee Dorsett; on Scientific Exhibit, Ralph L. Thompson; on Entertainment, Cyrus E. Burford; on Printing, Thomas A. Hopkins; on Registration, Theodore P. Brookes; on Sections and Section Work, Malvern B. Clopton; on Clinics, Harvey S. McKay; on Transportation, Robert F. Hyland, and on Badges, Edward P. Buddy.

All communications for the attention of the Local Committee of Arrangements or for any of its subcommittees should be addressed to the proper officer at 3525 Pine Street, St. Louis, Mo.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Medical Society Meeting.—The Dallas County Medical Society will hold a special meeting, October 18-19, at Selma, with clinics in medicine and surgery, children's diseases and other departments of the profession, under the direction of Dr. William W. Harper.

Removal of State Laboratory.—The state laboratory and Pasteur institute, Montgomery, moved, October 1, into their new modern quarters in the Health Building. New equipment has been installed, including apparatus for making analysis of water, for making blood tests and for sterilization.

Hospital News.—At the last session of the state legislature, an appropriation of $150,000 was made to build a home for the feebleminded near the Alabama Insane Hospital at Tuscaloosa, to be ready for occupancy early in the new year. An addition to the dining room and kitchens of the hospital will be made at a cost of $225,000.

ALASKA

Personal.—The governor has appointed Dr. Harry C. DeVighne, secretary of the Alaska Board of Medical Examiners, Juneau, territorial commissioner of health, effective, September 20.

ARKANSAS

Hospital News.—Work on the annex to the City Hospital, Little Rock, has been started. The building will be four stories high and will cost approximately $125,000.——It has been announced that three additional buildings will be erected at the State Tuberculosis Sanatorium, Booneville.

CALIFORNIA

Personal.—Dr. Wallace H. Barnes has been appointed resident physician at the University Infirmary, Berkeley. This is a newly created position, made necessary by the increased enrolment at the University of California.

Anesthesiology Required.—A recent amendment to the California medical practice law includes anesthesiology among the required subjects of the medical curriculum for institutions to be approved by the board of medical examiners.

Gift to Stanford Medical Library.—The California Organization for Federal Recognition of Women Physicians presented the fund for the Dr. Julia P. Larson Memorial Section of the Stanford Medical Library to the president of the organization, in September. This fund was raised by the women physicians of the bay cities, assisted by the Swedish Women's Organization, in memory of Dr. Larson, who was chosen by the California organization to represent them for federal recognition during the late war.

Opening of Laboratory.—A new physiotherapy laboratory, built and equipped at a cost of approximately $100,000, was opened, September 29, at Los Angeles. The laboratory is under the supervision of Hjalman Svensson, graduate technician of the Central Institute of Stockholm, for two years in charge of the physiotherapy department at the Los Angeles County Hospital. It will work in cooperation with the Los Angeles County Medical Association, and treatment will be administered after counseling with the patient's physician.

CONNECTICUT

Faculty Changes at Yale Medical School.—A number of faculty changes are announced at Yale Medical School. Two new professors are Dr. Francis G. Blake, John Slade Ely professor of medicine, and Dr. Edwards Albert Park, professor of pediatrics. Dr. Arthur M. Morse is now full professor and head of the department of obstetrics and gynecology. New associate professors are Dr. John P. Peters, Jr., department of medicine, and Dr. Alfred T. Shohle, department of pediatrics. Dr. Samuel C. Harvey, associate professor of surgery and attending surgeon, is in charge of the surgical department of the school. Assistant professors are Dr. Clyde L. Deming, urology; Dr. John Jamieson Morton, Jr., surgery; Dr. Grover F. Powers, pediatrics, and Dr. William C. Stadie, medicine. Dr. Eugene M. Blake has been made assistant clinical professor of ophthalmology. Several additions to the faculty of the rank of instructor have also been made.

DISTRICT OF COLUMBIA

Venereal Disease Clinic.—A three days institute on social hygiene was held this week in Washington at the Interior Department Auditorium. It was arranged under the auspices of the U. S. Public Health Service, the District of Columbia Social Hygiene Society and the Women's Advisory Council of the U. S. Public Health Service. Dr. Daisy M. O. Robinson of the U. S. Public Health Service, Mrs. Edith Houghton Hooker of Baltimore, Dr. Kate Karpeles, and Miss Margaret S. Brogden, chief of the social service department of the Johns Hopkins Hospital, were among the speakers who discussed the various phases of venereal diseases.

FLORIDA

Venereal Clinic to Be Established.—Capt. W. H. Gillette, U. S. Public Health Service, has arrived in St. Augustine from Washington, D. C., to establish a government clinic for venereal diseases in that city, under the direction of the state board of health.

GEORGIA

Personal.—Dr. Walter E. Barber, Atlanta, has resigned as member of the Fulton County board of health, as he is leaving the county, and will be succeeded by Dr. W. Frank Wells, Hapeville.——Dr. De Lamar Turner, Savannah, has been appointed county physician by the county commissioners to succeed Dr. Elton S. Osborne, effective October 1.

ILLINOIS

Personal.—Dr. Samuel W. Lathan, Eldorado, has been appointed chief medical director of the state industrial board.

Hospital News.—Plans have been submitted for the addition to the St. Francis Hospital, Litchfield, to be built at a cost of $50,000.

Typhoid in Kane County.—Eleven cases of typhoid fever occurred in St. Charles Township, Kane County, the result of drinking the milk from a dairy farm which furnished milk to Chicago. Three of the cases terminated fatally. It is believed that the fact that all milk sold in Chicago is pasteurized forestalled a severe outbreak in that city from the same source.

Research Work in Poliomyelitis.—The state department of public health and the department of animal pathology and hygiene of the state university are cooperating in efforts to determine, if possible, whether a relation exists between cases of poliomyelitis among human beings and of paralysis among farm animals. The department of health furnishes the university with information relative to the location of poliomyelitis cases, while the university collects specimens of excretions and secretions for bacteriologic and microscopic study.

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Birth Registration Drive Planned.—Director of Public Health Rawlings recently held a conference with the state registrar of vital statistics and an officer from the federal bureau of the census in regard to plans for enforcing the state vital statistic laws that require births to be reported completely and promptly. It appears that twenty-nine counties out of the 102 in the state are now responsible for delayed and incomplete birth reports. Efforts to put Illinois in the registration area will be concentrated in these twenty-nine counties, and when other means fail to secure complete reports, prosecution of offenders against the law will be instituted.

INDIANA

Tuberculosis Clinic.—A clinic was held at the Randolph County Hospital, Winchester, October 4. Dr. James H. Stygall, medical director of the Indiana Tuberculosis Association, was in charge.

Personal.—Drs. Robert E. Neff and George Bowman have resigned as superintendent of the city dispensary and district physician for the dispensary, Indianapolis. Drs. James R. Ritchey and Phillip H. Sheridan will succeed them.

Fined for Illegal Practice of Medicine.—It is reported that John F. Cassman, formerly an implement dealer in Lake Cicott, who recently announced himself a psychotherapy practitioner and opened offices at Kokomo, has been found guilty of practicing medicine without a license and fined $25.

Hospital News.—A memorial hospital for children in honor of James Whitcomb Riley will be built in Indianapolis from funds collected by the schoolchildren of the state during the month of October. The site was donated by the residents of Indianapolis, and an annual appropriation for expenses will be made by the state legislature.

Tuberculosis Nursing School.—At the meeting of the Indiana League of Nursing Education, held, October 5, at Indianapolis, Dr. Harold S. Hatch, Sunnyside Sanatorium, Oaklandon, announced that a course in tuberculosis nursing will be started at the sanatorium by affiliating with several general hospitals, the course to be elective on the part of student nurses in the hospitals.

State Charities Meeting.—The thirteenth annual meeting of the Indiana State Conference of Charities and Correction will be held, October 22-25, at Muncie. Among the speakers will be: Drs. Samuel Dodds, superintendent, Northern Hospital for Insane, Logansport; Alfred Henry, Indianapolis; Valeria H. Parker, secretary, U. S. Interdepartmental Social Hygiene Board, Washington, D. C., and Henry H. Goddard, Columbus.

IOWA

State Lecturer Speaks.—Dr. Jeanette F. Throckmorton, Des Moines, of the U. S. Public Health Service, and state lecturer for women, spoke to the women of Red Oak, September 23.

County Health Association.—At a general meeting, held, September 23, at Oskaloosa, plans were formulated for the organization of the Mahaska County Public Health Association, in cooperation with the Red Cross, which will have a voice in all legislation of the state and national organizations.

KENTUCKY

Board of Health Display.—At the state fair held in Louisville, September 26-30, the state board of health exhibited records from the Bureau of Vital Statistics in eleven volumes, and charts from the Bureau of Health Education. Dr. Jethra Hancock, director of the Bureau for the Prevention of Social Diseases, was in charge of the booth.

Licenses Revoked.—At a meeting of the state board of health held at its offices, Louisville, Sept. 22, 1921, after due notice and hearing, the certificates of Louis N. Pearlman and Samuel Pearlman, brothers, of Louisville, issued under the exemption clause of the new drugless practice law, were revoked, and their names ordered stricken from the registry in Kentucky, upon charges of itinerancy, false advertising and other grossly unprofessional conduct of a character likely to deceive or defraud the public.

Resolutions of Medical Society.—At the annual meeting of the Kentucky State Medical Association, held, September 27-29, at Louisville, it was resolved to use the property, bequeathed to the association by Mrs. Elizabeth S. Irvine, at Richmond, valued at $120,000, and consisting of 15 acres, for a home for indigent physicians of Kentucky and their dependents.——A committee was elected to prepare a memorial to the American Medical Association calling attention to the alarming lack of physicians in the rural districts of Kentucky.——A plan was approved by the house of delegates whereby the council will indemnify its members against unjust suits, filed by patients and alleging malpractice.

LOUISIANA

Hospital News.—The additional buildings to be erected at the U. S. Public Health Service Hospital, Camp Stafford, will cost approximately $100,000. Mess halls are being constructed to replace those destroyed by fire last year, and will accommodate 750 persons. A new kitchen and other buildings will be erected immediately.

Medical Society Meeting.—A meeting of the Lafourche Valley Medical Society was held, August 9, at Napoleonville, under the presidency of Dr. Willoughby E. Kittredge. Marion Souchon, New Orleans, the guest of the evening, gave a demonstration on repairing tears immediately after labor.

MAINE

Personal.—The governor has appointed Dr. Clarence F. Kendall, Biddeford, state commissioner of health, to succeed Dr. Leverett L. Bristol, Augusta, who resigned recently.

MICHIGAN

Personal.—Dr. Robert A. McGregor, Jackson, prison physician, has been appointed head of the new bureau of the state department of health, with supervision over medical, dental and sanitary work at state penal and corrective institutions.

Clinic for Communicable Diseases.—Under the direction of the board of health, a five-day clinic for communicable diseases will be held, October 17-21, in Muskegon. The clinic is divided into two units, one for tuberculosis, under Dr. Malcolm D. Campbell, and the other for children, under Dr. Frank L. Rose, to discover the remedial defects in the children, and those who give a contact history of tuberculosis. Two graduate nurses will assist, and ex-service men who desire to take advantage of this opportunity may be examined. Each evening a clinic will be held for consultation and diagnostic purposes in regard to venereal diseases.

Public Health Meeting.—Dr. R. M. Olin, commissioner, has announced a public health conference in Lansing, November 28 to December 2, in conjunction with the winter meeting of the Michigan Public Health Association. The state department of health has requested that every health officer and nurse in the state attend the meeting. Short courses of instruction and demonstrations will be given in problems of health administration and disease control. Among the speakers will be: Dr. William H. Park, director of the bureau of laboratories, New York City; Dr. Haven Emerson, former health commissioner of New York City; Dr. Wade H. Frost, dean of the department of physiology and hygiene, Johns Hopkins University, Baltimore; Harriet Leete, R.N., American Child Hygiene Association, and Dr. Charles E. North, director of the North Public Health Bureau, New York City.

MINNESOTA

Southern Minnesota Medical Association.—The annual meeting of the association will be held, December 5-6, at Mankato.

Nurses' Home.—At the twenty-seventh annual conference of the Northern Minnesota Methodist Clergymen, held September 24, at Minneapolis, a campaign committee was appointed to raise of fund of $250,000 for the Asbury Hospital Nurses' Home.

MISSOURI

Medical Meetings.—A joint meeting of the Medical Society of the Missouri Valley and the Medical Association of the Southwest will be held, October 25-28, at Kansas City.

Hospital News.—Oakhurst Sanatorium, the tuberculosis hospital for Gray's Harbor County, Elma, opened for the reception of patients, August 1.——Plans have been received for the new building which is to be erected near the Mullanphy Orphan Asylum, St. Louis. The building will be nine stories high, with a capacity of 500 beds.——The director of public welfare, St. Louis, has recently announced a plan for the expenditure of $1,000,000 for the establishment of the Koch Hospital.——The contract was let, September 12, for the new hospital of the Missouri Pacific Company at St. Louis, for which the ground has already been broken.

MONTANA

Campaign to Save Babies.—A conference of the state board of health and a committee from the Medical Association of Montana was held, September 14, at Helena. A campaign was planned to reduce maternal and infant mortality in the state in cooperation with the State Federation of Women's Clubs. Statistics show that 11.8 mothers in Montana die for every 1,000 living births, and in 1920, seventy-one of every 1,000 babies died before reaching the age of 1 year.

NEBRASKA

Infantile Paralysis Ban.—The state board of health of Shelton has issued an order placing a ban on all public gatherings owing to an outbreak of infantile paralysis.

Retail Credit Bureau.—At a recent meeting of the Douglas County Medical Society, held in Omaha, 380 physicians and surgeons voted to affiliate with the Associated Retail Credit Bureau of Omaha, which gives credit information of tens of thousands of families.

NEW HAMPSHIRE

Personal.—The governor has appointed Dr. William H. Lyons, Manchester, to the board of registration in medicine.

NEW YORK

Hospital News.—Work on the buildings of the Marcy division of the Utica State Hospital has been started. The building will cost approximately $2,724,000, and will accommodate 3,000 patients.

Right of Way for Physicians.—Special permits have been issued in Syracuse to all physicians to give them right of way through traffic when answering emergency calls. Plates received from the police department are attached to their cars.

School for Tuberculous Children.—At the meeting of the board of supervisors, Riverhead, in September, $1,100 was made available to equip a schoolroom for the children of the Suffolk County Tuberculosis Hospital, Haltsville, and to pay the salary of a teacher.

Personal.—Dr. George S. Graham, formerly at the Albany Medical College, has been appointed professor of pathology at the Post-Graduate Medical School, Birmingham, Ala.——Dr. Laurence J. Early has been appointed associate professor in bacteriology, and Dr. Percy Lawrence DeNoyelles will be assistant professor in pathology and bacteriology at the Albany Medical College.——At the meeting of the Rochester Medical Association, held, October 3, at Rochester, under the presidency of Dr. Loron W. Howk, Dr. George H. Whipple, dean of the new medical school, University of Rochester, was entertained at dinner, and outlined the plan of the new school which was made possible by the gift of the Rockefeller Foundation and Mr. George Eastman.——Dr. C. R. Stockard, professor of anatomy, Cornell University Medical College, New York, will deliver the first Harvey Society Lecture at the New York Academy of Medicine, October 22, on "The Significance of Modifications in Body Structure."

New York City

Drug Addicts Increasing in City.—Dr. Carleton Simon, special deputy police commissioner, in his report for the quarter ending September 30, states that although drug arrests so far in 1921 total 2,488, there are still 20,000 addicts at large in the city. The arrests for the quarter are unprecedentedly high, numbering 932, and this since the enactment of the new sanitary code relating to habit-forming drugs. Of 659 cases brought to trial, 93 per cent. convictions have been obtained.

NORTH CAROLINA

Medical Society Meeting.—The semiannual meeting of the Eighth District Medical Society of North Carolina was held, September 15, in Elkin, under the presidency of Dr. Malcolm A. Ryall.

North Carolina Tuberculosis Association.—A meeting of the association, in conjunction with the National Tuberculosis Association, was held, October 6-7, at Greenboro, under the presidency of Dr. Watson S. Rankin, state health officer. Dr. James Alexander Miller, president of the National Tuberculosis Association, delivered the principal address, and papers were read by Dr. Charles J. Hatfield and Dr. Charles L. Montgomery, U. S. Public Health Service, Oteen.

OHIO

Medical Meeting.—At the Second Councilor District Medical Society, held, September 19-23, at Dayton, addresses were given by: Drs. John Phillips and George Crile, Cleveland; D. K. Blackfan, General Hospital, Cincinnati; William A. Steel and Jesse O. Arnold, Philadelphia; Charles J. Wahlen, Chicago, and James F. Rooney, Albany.

Meeting for Graduate Medical Study.—A meeting of the Fairfield County Medical Society was held, September 29, at Lancaster for the physicians of the surrounding counties, under the auspices of the Medical Education Committee of the Ohio State Medical Association. Dr. John H. J. Upham, Columbus, professor of medicine, Ohio State University College of Medicine, gave an address on "Routine Physical Diagnosis."

New County Health Association.—It has been announced that Dr. Ervin A. Peterson, head of the puplic health department of the American Red Cross, Washington, D. C., has been director of the newly organized Cuyahoga County Public Health Association, to become effective October 16. Dr. Robert H. Bishop, Jr., superintendent of the Lakeside Hospital, Cleveland, is the president of the association; Dr. Roger G. Perkins, vice president.

OKLAHOMA

Public Health Meeting.—At the fourth annual meeting of the Oklahoma Public Health Association, held, October 11-12, in Oklahoma City, Dr. Hugh S. Cumming, Surgeon General of the U. S. Public Health Service, gave an address.

Aeroplane Ambulance.—Dr. Walter Hardy, proprietor of the Hardy Sanatorium, Ardmore, has purchased a Wright aeroplane to be fitted up as an ambulance plane, with hangers for a litter which will be installed in the framework of the fuselage. Shock absorbers will be placed on the landing gear, and other necessary changes made.

Hospital News.—It is planned to make improvements at the All Saints' Hospital, McAlester, at a cost of $50,000.——The contract has been let by the state soldiers' relief commission for a hospital for disabled soldiers at Sulphur at a cost of $384,000.——New buildings will be erected at the Eastern Oklahoma Hospital, Vinita, at a cost of $150,000.——The new tuberculosis sanatorium, at Clinton, for which an appropriation of $206,000 was made by the last legislature, will be completed this fall. The land consists of 160 acres, and was donated to the state by the citizens of Clinton.

PENNSYLVANIA

Municipal Ownership of Dispensaries.—Forty-two tuberculosis dispensaries which have been operated by the state health department have been taken over by the municipalities or local organizations to be conducted as local welfare projects, owing to curtailment of activities due to limited state appropriations.

Personal.—Dr. Charles Miller, Pottsville, is in Jefferson Hospital suffering with internal hemorrhages, and C. S. Marsh, a Hahnemann medical student and veteran of the World War, has submitted to two blood transfusions in order to save Dr. Miller's life.——Dr. Haven Emerson, New York City, late head of the Veterans' Bureau, gave a public lecture on the "Care of the Disabled Ex-Service Man," in Philadelphia, October 6, under the auspices of the Medical Society of the State of Pennsylvania.

Industrial Relations Conference.—The governor has announced that the Industrial Relations Conference will be held, October 24-27, at Harrisburg, under the direction of Commissioner C. B. Connelley, Department of Labor and Industry. The subjects for discussion will be: industrial cooperation, industrial waste, industrial education, women and children in industry, medical supervision in industry, and industrial publicity. This conference will take the place of the annual safety congress.

Typhoid Doubled in Year.—Pennsylvania had 1,684 cases of typhoid fever in July and August, against 601 in the same period of 1920, according to state health department data, which show a number of the cases to have resulted from careless handling of milk supplies. The model milk ordinance recommended by the department has been adopted in Scranton, Wilkes-Barre, Williamsport, Reading, Butler, New Castle, Waynesboro and York, and none of them had any typhoid fever traced to milk or ice cream.

State Medical Meeting.—At the annual meeting of the Medical Society of the State of Pennsylvania, held, Oct. 3-6, at Philadelphia, the following officers were elected for the ensuing year: Dr. Lawrence Litchfield, Pittsburgh, president; Dr. John B. Carnett, Philadelphia, first vice president; Dr. Victor B. Chaapel, Williamsport, second vice president; Dr. John B. McMurray, Washington, third vice president; Dr. Spencer M. Free, Dubois, fourth vice president; Dr. Walter F. Donaldson, Pittsburgh, secretary; Dr. Christian B. Longenecker, Philadelphia, assistant secretary, and Dr. John B. Lowman, Johnstown, treasurer.

Bureau of State Welfare Organized.—Dr. John M. Baldy, state commissioner of welfare, announced that the new welfare department would be organized with four different bureaus to look after different phases of state charitable work, and named the directors of three of the bureaus. All three directors are Philadelphians. Dr. Ellen C. Potter, now with the state health department, will be director of the bureau of children; Bromley Wharton, who was secretary of the state charity board, will be director of the bureau of assistance, which will look after the state's charitable and benevolent work in hospitals and institutions, and E. J. Lafferty, member of the state prison labor commission, will be director of rehabilitation, which will deal with rehabilitation work among the inmates of penal institutions. The director of the bureau of mental health, which is provided by legislative enactment in the measure creating the welfare department, has not been selected. The activities of the bureau of mental health are to be devoted to perfecting and expanding the dual (state and county) system of caring for the insane, of expanding the activities of the state in the line of feebleminded and of starting an active and studied campaign of education with the object of leading to the future state care of these wards of the state. The bureau of children will have for its object not only standardization of all institutions caring for children, but shall aim to house as many children as possible in families rather than in institutions. That policy already has been adopted by the state in establishing the mothers' assistance fund.

Philadelphia

College of Physicians of Philadelphia.—A meeting of the college was held, October 5, at Philadelphia. Dr. Henry Rawle Geyelin, New York City, read a paper on "Dietetic Management of Epilepsy."

Medal for Dr. Wingfield.—Dr. Russell Stewart Wingfield, formerly of the staff of the Stetson Hospital, who died, August 27, in Saloniki, Greece, from burns received while rescuing patients during a hospital fire, has received the posthumous award of the Greek "gold medal for devotion in epidemic duty."

Personal.—Sir Harold J. Stiles, K.B.E., M.B., C.M., F.R.C.S., regius professor of clinical surgery, University of Edinburgh, was the guest of honor of the Medical Club of Philadelphia, October 21.——At a meeting of the board of directors of the Philadelphia College of Pharmacy, held, September 26, Rear Admiral William C. Braisted, former Surgeon General of the U. S. Navy, and formerly President of the American Medical Association, was reelected president of the college.

Major Raken a Chevalier.—Major William Elkin Raken, who had charge of the medical forces with the American army in Italy during the war, has received word from Rome that he has been made a chevalier of the Order of the Crown of Italy by the king. Dr. Raken was in the last drive of the Italians against the Austrians, and after the armistice he took charge of the base hospital at Cornigliano, Ligure, Italy, and also served for a time as medical officer at the port of Genoa. While abroad he was personally decorated by the king of Italy with the Military Cross. Dr. Raken is chairman of the committee on medical aid and disabled soldiers of the American Legion in Philadelphia County.

American Academy Meeting.—The twenty-fifth annual sessions of the American Academy of Ophthalmology and Oto-Laryngology will be held in Philadelphia, October 17 to 22. The convention will open with a business program, October 17, and the annual address of the president, Dr. Emil Mayer of New York. Papers on industrial diseases will be discussed that day. The speakers will be Dr. Hans Barkan, San Francisco; Dr. John A. Donovan, Butte, Mont.; Dr. George Cross, Chester, Pa.; Dr. Percy Fridenberg, New York, and Dr. William M. Sweet, Philadelphia. Prof. J. Van der Hoeve, world-famous ophthalmologist of Leiden, Holland, will be an official guest of the academy and will speak at the morning session, October 18. His topic will be "Certain Relations Between the Eye and Ear, Including Vestibular Organs." The officers of the academy are: Drs. Emil Mayer, president; Secord F. Large, Cleveland, treasurer, and Luther C. Peter, Philadelphia, secretary.

TEXAS

Consumption Cure Quacks Guilty.—Six of the seven defendants composing the Thompson Treatment Co., who have been on trial in the federal court in San Antonio for the past two weeks, on the charge of using the mails to defraud, were found guilty, October 8. The Thompson concern operated a fraudulent consumption cure. The six men convicted were: H. B. Thompson, K. D. Thompson, J. G. McCoy, A. F. W. Macmanus, H. Fitzgerald, M.D., and O. R. Marshall, M.D. The protection against this particular fraud which the public has obtained through this conviction should be credited, in no small degree, to the excellent work of Assistant United States Attorney Leo Brewer, and Postoffice Inspectors William Renken and Leroy W. Morris. An analysis of the product used in the alleged treatment, made in the American Medical Association's Chemical Laboratory, doubtless played no small part in convincing the jury of the essential fraudulence of the scheme.

WASHINGTON

Personal.—Dr. Howard M. Francisco has been appointed superintendent and physician of the Washington State Veteran's Home, Retsil.

Medical Meetings.—The thirty-second annual meeting of the Washington State Medical Society, was held, September 2-3, at Seattle, and the annual session of the health officers of Washington, August 30.

Ban on Contracts.—At the meeting of the Spokane County Medical Society, held, September 22, at Spokane, a resolution was passed that members under contract for professional services to corporation employees and who insisted on holding their contracts should be expelled from the society.

Seattle Academy of Surgeons.—This association was organized in Seattle, Aug. 25, 1921. The following officers were elected at the first meeting: president, Dr. Charles C. Tiffin; vice president, Dr. E. Weldon Young, and secretary-treasurer, Dr. Charles E. McClure. Meetings will be held twice monthly.

WISCONSIN

Hospital News.—The new isolation hospital, Racine, was opened, October 1. The building was erected at a cost of $125,000.

New Medical Dispensary.—A new medical dispensary will be erected at the Cudahy Brothers Packing Company, Cudahy, at a cost of $5,000, presented by the president, Michael F. Cudahy, as a gift to his employees.

State Board of Health Appointments.—Dr. Valentine A. Gudex, Eau Claire, has been appointed deputy state health officer of the fourth district, state board of health, and Drs. Louis Dorpat, Rhinelander, and Ira F. Thompson, Madison, as directors of the state bureau of communicable diseases.

Personal.—Dr. Fabian J. Gosin, Green Bay, has resigned as city health commissioner, effective October 1.——Dr. Edward L. Miloslavich gave a lecture on "Pathology—Its Aims, Scope and Methods of Teaching" at the Department of Pathology at the Marquette School of Medicine, Milwaukee, October 6.

Wisconsin Antituberculosis Association.—The annual meeting of the association will be held, October 20-22, at Milwaukee. Dr. David Russell Lyman, superintendent of the Gaylord Farm Sanatorium, Wallingford, Conn., former president of the National Tuberculosis Association, will be among the principal speakers.

Organization of New Society.—At the meeting of the Milwaukee County Medical Society, held, September 23, a new society was organized to be known as the Association of Medical Sciences, comprising more than 1,000 physicians, dentists, druggists and nurses, for the medical education of the public. The medical council will consist of ten physicians, ten dentists, ten druggists and ten nurses.

Medical Regiment.—The first medical regiment in the U. S. Army will be stationed in Wisconsin, through the efforts of Adjt.-Gen. Orlando Holway. The medical regiment for the Wisconsin National Guard will be known as the Sixth Corps Area Medical Regiment. There will be field hospital companies, sanitary companies, ambulance com-

panies and supply companies. Col. Gilbert E. Seamen, surgeon-general of the Wisconsin National Guard, is in command, assisted by Major William F. Lorenz.

CANADA

Western Ontario Academy of Medicine.—The first general session of the society was held, September 29, at Byron, Ont., when various phases of pulmonary tuberculosis were presented by Dr. Pretten, superintendent of the Queen Alexandra Sanatorium, Byron, and other physicians. The second session was held, October 7, at London, Ont., when Dr. Charles F. Neu, Indianapolis, spoke on "Some Phases of Encephalitis Lethargica" and Dr. Russell G. MacRobert, New York City, on "Fits and Fallacies."

GENERAL

Railroad Surgeons Meeting.—The fourteenth annual meeting of the Minneapolis, St. Paul and Sault Ste. Marie Railway Surgical Association will be held, October 21-22, at Chicago, under the presidency of Dr. George F. Thompson, Chicago.

The Radiological Society of North America.—The annual meeting of the society will be held, December 7-9, at Chicago. Among the speakers will be Dr. Guilleminot, Faculté de médecine, Paris; Dr. Wintz, Erlangen, Germany, and Prof. James G. Van Zwaluwenburg, University of Michigan, Ann Arbor.

American Dietetic Association.—The fourth annual meeting of the association will be held, October 24-26, at Chicago. There will be a commercial exhibit of equipment and labor saving devices, and a noncommercial exhibit of charts, bulletin and health posters. Among the principal speakers will be: Prof. Campbell P. Howard, Iowa State University, on "The Sphere of the Dietitian"; Dr. Rollin T. Woodyatt, assistant professor of medicine, University of Chicago, on "The Newer Ideas on the Dietetic Management of Diabetes and Their Practical Working Out in the Hospital," and Dr. A. L. Daniels, Iowa State Child Welfare Association, University of Iowa, on "The Dietary Needs of a Children's Hospital."

Foreign Physicians to Study in America.—Eight young physicians from Czechoslovakia and three from Poland have just arrived in New York for a period of special study and research in the United States under fellowships granted by the Rockefeller Foundation. The following men from Poland and Czechoslovakia began their studies in American institutions, October 1:

Dr. Ferdinand Tomanek at the Memorial Hospital, New York City, to study of method of research used in determining the effects of irradiation on tissues. Dr. Tomanek has already studied radiology under Dr. William Duane of the Harvard Medical School.

Dr. Vilem Hons will study physiologic and nutritional chemistry. Dr. Hons is a physician of 31, who received his medical degree from Charles University, Prague, in 1915. He has agreed to serve as biologic chemist in the Institute of Hygiene, at Prague, for a period of at least five years after his return to Czechoslovakia.

Dr. Karel Urbanek has come to study bacteriology and serology in order to fit himself for service as bacteriologist and serologist in the Institute of Hygiene. Dr. Urbanek has been assistant in pathologic anatomy and bacteriology in the Czech University. He spent six years in Siberia with the Czech legionaries.

Dr. Jarka Masek will study public health administration in preparation for governmental service in administrative work after his return to Czechoslovakia. Dr. Masek has a medical degree from the University of Prague, and has had several years' experience in hospitals and as district health officer.

Dr. Jan Jurena is to study food chemistry in the United States with a view to becoming food chemist at the Institute of Hygiene. Dr. Jurena is an experienced food chemist and is now director of food laboratories for Moravia in Brno.

Dr. Otto Schubert will study bacteriology and serology in preparation for service in the Institute of Hygiene. He has been serving in the department of bacteriology and serology in the Czech University.

Dr. Jaroslav Drbohlav of Czechoslovakia will study bacteriology preparatory to work in the Institute of Hygiene, Prague. At present he is the head of the district public health laboratory in Moravsko Ostrava.

Dr. Otokar Slanina will return to his own country to take a position of leadership in public health administration.

Dr. Jan Surawski of Poland will make a special study of hospital administration and schools for training bedside and public health nurses. Dr. Surawski is a graduate of the medical faculty of the University of Zurich. After practicing medicine for a period of years, he became a health officer and later a hospital inspector. At present he is assistant in the bureau of hospitals in the Polish ministry of health, and will return to the ministry of health to take charge of the division of hospitals.

Dr. Joseph Celarek of Poland will specialize in the routine work of public health laboratories and the production of serums. Dr. Celarek is an experienced bacteriologist, now in charge of antityphus fever work in Lublin. He will return to take up important work in the Polish ministry of health.

Dr. Czeslaw Wroczynski of Poland, who has been awarded a fellowship for a year's study of public health and hygiene in the United States, is a graduate of the University of Paris Medical School. He has had wide experience as epidemiologist to the Polish ministry of health. He will return to Poland to fill a responsible position in the ministry of health.

LATIN AMERICA

Yellow Fever in Mexico.—According to newspaper reports, a new outbreak of yellow fever has occurred at Mazatlán and Culiacán, Mexico. Several deaths have already been reported.

Paraguay Medical Notes.—The Medical Society of Asunción, Paraguay, has decided to invite all physicians in the country to become members so the society will assume a national scope.——During the year 1920 over 29,000 patients were treated at the National Hospital and 19,000 in the outpatient department. It is intended to build a new pavilion soon.

Argentine-Uruguay Joint Meeting of Pediatricians.—The Sociedad Argentina de Pediatria, of which Dr. J. C. Navarro is president, invited the corresponding society in Uruguay to a special session and the invitation was accepted. The joint meeting was on September 20 and 21, and besides the scientific sessions, visits to medical and social service centers were planned.

Changes in the Public Health Bulletins of Cuba.—Dr. Guiteras has started a new policy in connection with the publication of the official bulletins of the Cuban Public Health Department. Hereafter, besides the quarterly edition of the bulletin, there will be a monthly bulletin entitled *Sanidad y Beneficencia* which will contain statistical and sanitary information. The quarterly edition will be reserved for more extended and technical reports. In addition, the reports published three times a month will contain summarized information on the prevalence of communicable diseases. The annual report, as heretofore, will be published as a supplement to the official bulletin.

Tribute to Kraus.—As Dr. Rudolph Kraus left Buenos Aires to take charge of the Butantan Institute in Brazil, he was tendered a banquet by the medical and other scientific organizations of Argentina, as tribute to his work as director of the bacteriologic institute of the national public health service of Argentina. This was founded by Penna in 1913, and he called Kraus to take charge of it. The works of the latter on typhoid, anthrax, whooping cough, endemic cretinism, malaria and epizootics have been frequently reviewed in THE JOURNAL. Dr. Alois Bachmann has been appointed director in his place. He has been chief of one section in the institute under Kraus. The address by Aráoz Alfaro at the banquet to Kraus is published in the *Semana Médica* of September 8.

Public Health Bulletin of El Salvador Renews Publication.—With the reorganization of the public health department of El Salvador, the *Boletin Sanitario*, its official organ, has renewed publication. The new director of public health is Dr. Luis V. Velasco; secretary, Dr. Carlos Muñoz Barrillas; inspector general of vaccination, Dr. M. Quijano H; director of the hookworm disease department, Dr. C. A. Bailey, of the Rockefeller Foundation. With the reorganization, all sanitary institutions of Salvador have been brought together, with the exception of the army military corps. According to the first report of the new director, the department is now thoroughly organized into different divisions and an active campaign against communicable diseases is being conducted. During the first quarter of 1921, 20,550 people were vaccinated and 14,388 revaccinated. The report lays stress on the assistance received from the Rockefeller Foundation in the yellow fever campaign.

FOREIGN

Conference of Assistants in Roentgen Laboratories.—A congress of women working in roentgen laboratories was held last month at Berlin.

Personal.—At the invitation of the Commonwealth Government of Australia, Dr. Charles N. Leach of the Rockefeller Foundation has sailed to assist in the work for the control of the hookworm.

From Parade Ground to Sanatorium.—The great parade ground at Berlin has been transformed into a field for light and sun baths for children with surgical tuberculosis. A Netherlands exchange comments that this is one of the blessings of the compulsory disarmament.

The International Antialcohol Congress.—At this meeting held recently in Switzerland, it was decided to convene the next congress at Copenhagen or Helsingfors, in 1923. The permanent committee of organization consists of H. Draut, member of the Swiss legislature, and Eilesen, member of the Danish legislature, with Weymann of Berlin and Soinioren of Helsingfors.

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Tribute to Fredericq of Liége.—The *Scalpel* of Brussels states that as Léon Fredericq retires in November from the chair of physiology at the University of Liége, a medallion is to be presented to him. The list of his works is a long one and some of his textbooks have been translated into other languages. His son succeeds him in the chair of physiology of which he has been the incumbent for fifty years.

Woman in Medical Chair.—The London University senate has appointed Dr. Louise McIlroy to the chair of obstetrics and gynecology at the London School of Medicine for Women. Dr. McIlroy was educated at the universities of Glasgow, London, Berlin, Vienna and Paris. She was surgeon in charge of the Scottish Women's Hospital at Saloniki and Belgrade from 1915-1919; since then she has been gynecologic specialist in the Eighty-Second General Hospital, Constantinople.

New Italian Medical Journal.—The *Archivio di Patologia e Clinica Medica* is soon to appear, a companion to the *Archivio Italiano di Chirurgia*, both issued by L. Cappelli at Bologna, Via Farini 6. It is to be published as material accumulates, six numbers forming an annual volume of about 600 pages, for which the subscription is 75 liras. The editorial staff consists of F. Schiassi, L. Zoia and G. Viola. The special field of the new *Archivio* is applied science in the service of internal medicine.

Cancer in Germany.—The statistics for the years 1914-1918 have recently been published and show that there has been no appreciable increase in recent years. In men the number has actually declined, from 23,494 in 1914 to 21,804 in 1918; the losses in war could scarcely have affected this, as the soldiers are not in the cancer age. In women there has been a slight increase, from 28,694 to 29,361. In 1904 the total average was 6.2 per 10,000, in 1913, 8.2. No regular laws can be deduced from these findings as in some districts the cancer mortality has advanced and in others declined during the years in question.

University of Jerusalem.—The foundations have been laid for the new university, to which the Jewish physicians in the United States are giving $1,000,000 to build the medical college, of which the inside will be furnished in accord with American standards, with white tiled operating rooms, while the exterior will conform to the general plan of the university. Dr. Albert Einstein will be dean of the university, and an American surgeon, assisted by an all American staff, will be at the head of the medical department. Patrick Geddes, professor of botany, University of Edinburgh, has drawn up the plans for the building, which will be open to students from all countries, and will be nonsectarian.

Proposed Reforms in the Medical Curriculum in Germany.—The committee appointed by the German medical faculties to propose improvements in medical education has presented its report to the government, with the approval of most of the faculties. According to the *Medizinische Klinik*, the main points in the new plan are that the student can change his school at will, and the hours devoted to special branches are restricted to a certain maximum. The plan calls for twelve semesters, five for the preclinical and seven for the clinical work. Practical training is to be obtained during the summer vacation, and the "practical year" is to be dropped. The total length of the course will be six years as previously, with thirty semester week hours. The course is to begin in the spring with the summer semester and after the first semester there must be six weeks of attendance on the sick. After the third semester comes the examination in chemistry, physics, zoology and botany; after the fifth, in anatomy and physiology. The aim is to train thoroughly in the fundamentals only, during the first four semesters. All the special branches are deferred to the last three semesters. During the twenty weeks of vacation time, from twelve to fourteen weeks are to be devoted to practical training (four months to internal medicine, three months to surgery, and three months to obstetrics).

Deaths in Other Countries

Dr. **S. Kreisler** of Vienna, member of the Vienna Medical Society, father of the violinist, aged 76.——Dr. **J. Cortés Bayona** and Dr. **L. Martí Lis,** both medical inspectors in the Spanish army.——Dr. **J. Valdés Castro** of Havana, founder of the sanatorium Quinta la Benéfica, aged 79.——Dr. **M. Gonzáles de Segovia,** president of the organized profession in Badajoz province, Spain.——Dr. **C. Palladini,** in charge of the antimalaria work in the Roman marshes.——Dr. **M. Gil Rodríguez,** director of the *Gaceta Médica Asturiana.*——Dr. **J. A. Hjort** of Lund.

Government Services

New Dispensary for Washington Navy Yard

A new dispensary building to cost about $54,000 is to be constructed at the Washington, D. C., Navy Yard on the site of the existing small dispensary which is to be removed for the purpose. The improvement is being made at the urgent solicitation of the Surgeon-General of the Navy.

Examinations for the U. S. Public Health Service

It has been announced by the Surgeon-General that examinations of candidates for entrance in the regular corps of the U. S. Public Health Service will be held, November 14, at Washington, D. C., Chicago and San Francisco. Candidates must be between 22 and 32 years of age, and graduates of a reputable medical school. They must pass satisfactorily oral, written and clinical tests before a board of medical officers. Successful candidates will be recommended for appointment by the President with the advice and consent of the Senate. All requests for information should be addressed to the Surgeon-General, U. S. Public Health Service, Washington, D. C.

Surgeon-General Defends Public Health Service

Surgeon-General Cumming has issued a statement in defense of the U. S. Public Health Service's record of the care and treatment of ex-service men since the close of the World War. "The furnishing of hospitals to care for disabled veterans was the primary task assigned to the health service," the statement says, "but to it were added sundry sorts of work that seemed necessary to its full discharge. For instance, the service established, in all parts of the country, supervisors, whose chief duties were to search out suffering and disabled soldiers who were unaware of their rights under the law and to guide them in making applications for such care as they needed. The providing of hospitals, however, was the main duty and that duty has been thoroughly discharged by the health service. No ex-soldier who could produce any reasonable evidence of his right to hospital care has ever been denied it by the health service. The insistence on at least primary proof has proved to be essential: cast-off uniforms are cheap and masqueraders in them are not lacking: and if every one who applied for hospitalization were admitted without at least some investigation, no room would be left for the rightful applicants. That the hospital service provided has not always been what it should have been is not denied. Defects have occurred—defects which probably troubled the health service more than they troubled the vast majority of patients—but they were due to the immensity of the problem and the swiftness with which it came upon the country. Not that the Public Health Service failed to foresee what was coming. It did foresee it. As a result of this foresight, on Dec. 15, 1919, the Secretary of the Treasury reported to Congress that within two years hospital facilities would be required for 30,660 patients, and that $85,000,000 in instalments would be needed to provide this. That the report was justified appears from the fact that little more than a year and half later, 27,000 patients were being cared for by the Public Health Service, about 10,000 of them in private hospitals under contract. Nevertheless, when that request was made the Public Health Service was subjected to a great deal of criticism for asking for so great a sum. It was also urged that the facilities for the care of disabled soldiers that had sufficed during the war (for instance, the hospitals in the army camps) would serve very well for them when the war was over. These councils prevailed, and no money for construction was appropriated. Certain limited funds that had been provided in 1919 by Congress were, however, available for construction, purchase, and for leasing. With these so far as they went, existing facilities were expanded and others were leased or bought and certain base hospitals taken over from the army and from the navy were improved. In addition, the use of certain limited facilities in national soldiers' homes were made

available. Those who have criticized the facilities offered in the hospitals should realize that they were the best that the Public Health Service could at the moment obtain. With a certain percentage of the available accommodations it has always been largely a choice of evils: and the service has taken the best it could get, not because they were satisfactory but because it had to take something."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 19, 1921.

Precautions Against Cholera at British Ports

The ministry of health and health officers at the ports are giving close attention to the outbreak of cholera in southeastern Russia. When an epidemic is raging in any part of Europe there can never be certainty that the disease can be kept out of Great Britain, but all reasonable precautions are being taken to prevent the introduction of the infection. Up to the present, it is stated, no ports in direct communication with Great Britain are affected by the epidemic in Russia. The Black Sea port traffic ought in the ordinary course of things to be supervised at Constantinople, and the view taken by the ministry of health is that the only anxiety we need have would arise through infection of ports in the Baltic and the North Sea. The measures so far taken are as follows: Attention has been drawn since July 21 to the probabilities of epidemic cholera spreading in Europe in the weekly bulletins circulated to port sanitary authorities. These bulletins contain the information collected by the ministry in regard to epidemic exotic diseases in all parts of the world. The medical section dealing with port sanitary precautions is fully prepared for eventualities, and for seeing that the requirements of the sanitary convention and the ministry's own cholera order are duly observed by the respective port sanitary authorities.

The Craniums and Skulls in the Museum of the Royal College of Surgeons

The annual report on the museum of the Royal College of Surgeons by the conservator, Sir Arthur Keith, is, as usual, of considerable scientific interest. He announces the preparation of a new catalogue of the human craniums and skeletons. Although only a small number of human skulls and skeletons were contained in the original hunterian collection, by the efforts of successive conservators, extending over a century and more, the college now possesses the most representative and valuable collection of this kind in the British Empire—perhaps in the world. It represents a mine of knowledge which has been only imperfectly explored. For some years the need of a new descriptive catalogue has been felt. At the suggestion of Prof. Karl Pearson, and with the sanction of the president of the college, the conservator applied to the Council of Scientific and Industrial Research for financial aid to pay a research worker to prepare the materials needed for a new descriptive catalogue. The council agreed to the engagement of Miss M. L. Tildesley, a highly skilled research worker, trained under Professor Pearson, and undertook to pay her a salary of $1,000 for the first year. During the war, many additions were made both to the British and the foreign sections of the series of human osteology; but, owing to the pressure of other work, the conservator had to leave them uncatalogued. Miss Tildesley has devoted the greater part of her first year to a preliminary survey of the collection and to drafting a scheme of classification which permits of easy growth of the collection and its systematic description.

For many years it has been the custom to accept and preserve in the museum all early human remains found in Great Britain when found under such circumstances as gave an approximate clue to their date. In time it is hoped that sufficient material will accumulate to provide a basis for a physical history of the inhabitants of these islands. From the evidence accumulating under his hands, Sir Arthur Keith has become convinced that definite changes, particularly in the face and jaws, have been taking place in a large proportion of the British people during the last century or two. The date at which these changes began to take place, their exact nature and their extent can be determined only by systematic examination of the material. Sir Arthur Keith has therefore examined and kept a record of all human remains brought to the museum, even when the owners would not add them to the collection. In the last year reports have been made on remains from Hereford (chiefly cremations), from Eastbourne (a skull from a Saxon grave), two series from Swindon (late neolithic or early bronze period), and remains found in the Mendips (neolithic and late Celtic). Mr. J. A. Bullbrook, government geologist in Trinidad, sent home for examination several boxes of human remains, one box containing an entire burial still embedded in its earth matrix, from an ancient shell mound. The pottery accompanying the remains indicated that the people represented belonged to a period preceding the discovery of America by Columbus. A collection of great value received represented the inhabitants of a settlement—probably British—toward the end of the Roman occupation of Britain.

Sexual Differentiation in Regard to Head Shape and Pigmentation

At the recent meeting of the British Association for the Advancement of Science, Miss R. M. Fleming read an interesting paper on observations which she had been making for three years on women and children with a view to finding out how far sex and growth as well as race type influence physical characters. Her measurements bore out Dr. Fleure's conclusion that there is in woman a greater tendency to pigmentation and brachycephaly. Measurements of very young children before bony development of the forehead had set in showed that girls' heads were rounder than boys', and that a tendency to increase more in breadth than in length was noticed earlier in girls and was more steady and persistent. Describing observations on the darkening of the hair, Miss Fleming frequently noticed that, instead of the whole head of hair darkening, it darkened in patches, so that hair which was flaxen at one observation was flaxen and dark flaxen at the next, and then dark flaxen and light brown. The presence of two shades almost always indicated that darkening was in process. In a few cases both in boys and in girls the change of color took the form of the appearance of a red tint. Boys did not darken so soon or so rapidly as girls.

The Nation's Teeth

The Medical Research Council, in consultation with the ministry of health, has appointed a committee, consisting of well-known authorities, to investigate the causes of dental decay. The committee includes Prof. W. D. Halliburton (physiologist) who is chairman; Sir Arthur Keith, N. G. Bennett and J. Howard Mummery (authorities in dentistry); Dr. L. Colebrooke (bacteriologist), and Mrs. E. Mellanby (well known for her work in connection with her husband on rickets and the effect of dietetic deficiency in producing dental caries).

A Provident Specialistic Medical Service

The system of providing for medical treatment by means of an annual payment has existed for many years, but has never included more than the services of the ordinary family

physician, and has been practically confined to the working classes. A new scheme, which has been under discussion for some time, has now been launched. It does not provide ordinary medical treatment, but specialized treatment including consultations at the hospital, nursing at home, dental treatment in the hospital, roentgen rays, massage, electrical treatment, and radium treatment. Urgent cases will be admitted to the hospital as at present. Other patients requiring operation or other hospital treatment will, after consultation, be admitted to hospital in due course, but a member will not take precedence over more urgent cases. The limit of income of persons applying for membership and the annual subscription are:

		Limit of Income	Subscription
Group 1.	(a) Single person over the age of 16. (b) Widow or widower without children under age of 16, or other dependents	$1,250	$5.00
Group 2.	(a) Married couples without children under age of 16. (b) Single person with one dependent. (c) Widow or widower with one child under 16 or one dependent	2,000	7.50
Group 3.	(a) Married couples with a child or children under age of 16 or other dependents. (b) Single person with more than one dependent. (c) Widow or widower with more than one child under 16, or other dependents	2,500	10.00

In Groups 2 and 3 the income limits have reference to the combined income of the persons in respect of whom application is made, and will be reducible as children pass beyond the age of 16 or when dependence of another member of the family ceases.

The voluntary hospitals are now asking patients to contribute toward their cost to the hospital. The members of the provident scheme will not only escape this inconvenient call on them in illness, but also will have the satisfaction of knowing that they are paying their way and helping to maintain the high traditions of the voluntary system of hospital administration. The institutions cooperating in the scheme are the London Hospital, St. Thomas' Hospital and the Royal Free Hospital.

Proposed Reduction of the Capitation Fee of Panel Physicians

With the fall of prices and, to a less extent, of wages which has recently taken place, an attempt by the government to reduce the capitation fee of panel physicians is anticipated. It is estimated that a saving of $10,000,000 a year could thus be effected. The panel physicians at present receive $33,500,000. The reduction of the capitation fee from $2.75 to $2.25 is said to be contemplated. The *British Medical Journal* hopes that "the suggestions that such reduction is to be proposed are irresponsible. If not, a situation will arise of great importance to the medical profession and to the public, and the organized bodies of the profession must be prepared to defend their own and the public interest." Meanwhile the Insurance Acts Committee of the association has made the following suggestions to the coming panel conference, to be held on October 20: "That the conference reaffirms the opinion that $3.50 is the lowest capitation fee that should be offered for an effective service; but, in view of the arbitrators' award of $2.75 and in view of the serious state of the national finances, does not at present press for an increase of the capitation fee to that amount. That the conference has no desire to give other than a liberal interpretation to the phrase 'such treatment as is of a kind which can consistently, with the best interest of the patient, be properly undertaken by a general practitioner of ordinary competence and skill.' That the conference would welcome a wide inquiry into the working of the National Insurance Acts, but suggests that the part of any such inquiry concerned with medical benefits should not be entered into until after April, 1922, when the new regulations will have been two complete years in operation. That the measure of success which has attended the experiment of providing medical benefit under the National Health Insurance Acts system has been sufficient to justify the profession in uniting to insure the continuance and improvement of the system."

PARIS

(From Our Regular Correspondent)

Sept. 16, 1921.

Where Do Our Clients Come From?

Under this title, Dr. Faisant, chief editor of the *Annales des médecins praticiens de Lyon et du Sud-Est*, publishes in that journal the results of his inquiry into the origin of his clientele, which seem to present a certain general interest. He divides his clients into several groups. The first group includes clients who have deliberately chosen their physician in preference to others. Various factors may have determined their choice: deliberate selection from a list furnished by a syndicate, or hostility toward, or lack of confidence in, the physician previously consulted or toward his successor. In other cases the choice is guided by motives having but little to do with care of the health. This applies especially to merchants (small dealers, as a rule) who, in some connection or other, have been or hope to become purveyors to the physician, and who, in return for his patronage, endeavor to send him patients, or they may even employ him themselves, having in mind commercial reciprocity. Sometimes choice, properly so-called, is limited by circumstances, and at times is even suppressed or nearly so; for example, when the urgency of the case makes it imperative for a patient or an injured person to call on the nearest physician. Then there are the cases in which a family, recently arrived in a city or placed under a disadvantage by the absence of the regular physician, inquires at the nearest drug store for the address of one. There still remain those clients who consult a physician because they are personally acquainted with him or with some member of his family, or are in some way related to him. Dr. Faisant classes under the last mentioned group also those clients who are referred to a physician by his relatives or friends. Former patients, too, often become the source of new clients. Among these, two groups may be distinguished: patients referred by ordinary clients and those recommended by indigent persons visited in their homes at the request of some relief administration (charity bureau, dispensary, etc.). Closely allied to the latter group are hospital charity patients who consult the physician whom they have met at the hospital or whom a friend or relative who has been treated in the hospital has recommended. The advantages (or disadvantages, as the case may be) of publicity must also be taken into account. We are all familiar with the undue prominence very often given by newspapers to accidents or sudden deaths (for example, "rupture of an aneurysm" so much favored by reporters) which may have required the intervention (usually platonic) of a physician. The physician's name is often mentioned in connection with such cases though he may have done nothing to merit such distinction. The arrival or installation of a physician in a new field of activity may also give rise to a certain amount of publicity. It occasionally happens that patients call the wrong physician; especially is this true in the case of industrial accidents when a factory owner or a foreman refers the injured man to his own physician, and the workman goes to the wrong address. There is also the case of a physician who, on account of illness, is unable to grant a consultation, or who is absent and leaves instructions to send his patients to a certain colleague. There are also a considerable num-

ber of clients whom we are obliged to classify as of unknown origin. The following list gives the relative proportion of clients in the various groups on the basis of an assumed total of 10,000 patients, which plan was chosen as being better adapted to bring out the differences in the less important groups than would be possible if the representation were given on a percentage basis: choice made from syndicate's list, 114; hostility toward the usual physician, 83, toward his successor, 26; commercial reciprocity, 405; referred by a druggist, 187; urgent cases, 3,091; acquaintances, 291; referred by former clients, 706; charity patients, outside of hospital, 1,231, hospital, 47; publicity, 52; result of error, 36; referred by colleagues, 374; unknown origin, 3,357.

The Marcel Benoist Prize

The special committee appointed by the Swiss federal council to award the Marcel Benoist prize of 20,000 francs has selected as the first recipient Dr. Maurice Arthus, former assistant director of the Pasteur Institute of Lille and at present director of the Physiologic Institute of Geneva. He is also the author of a book entitled "Anaphylaxis and Immunity" (THE JOURNAL, April 30, 1921, p. 1259). According to the terms of the will of Monsieur Marcel Benoist, an attorney of Paris who left his whole fortune to the Swiss federal council as an expression of his gratitude for the medical care he had received in Switzerland, this prize must be awarded each year to the scientist who, having been a resident of Switzerland for at least five years, shall have made, during the preceding year, "the most useful discovery, invention or research in the sciences; more particularly those pertaining to human life."

Death of François-Franck

Dr. C. E. François-Franck, who was a professor at the Collège de France, died recently at the age of 72. He was born in 1849 and studied in Bordeaux, where he taught for several years. In 1878, he came to Paris and was chosen by Marey as preparator of anatomic specimens. He later succeeded Marey as professor of physiology at the Collège de France. He specialized in the study of the normal and pathologic physiology of circulation, and made frequent use of chronophotography, invented by Marey, and also of the graphic method in the study of physiologic phenomena. He likewise solved several problems dealing with the functioning of the sympathetic system, and, during the last years of his life, devoted himself especially to researches on the comparative physiology of respiration and circulation, mainly in fish and insects. In 1887 he had been elected by the Academy of Medicine as corporate member in the section of anatomy and physiology.

BERLIN

(From Our Regular Correspondent)

Sept. 17, 1921.

Modification of Mothers' Benefits

The modification of the law pertaining to weekly allowances and medical care during illness, in view of the depreciation of the value of the mark, affords considerable relief to parturients and puerperants. The allowance toward the cost of confinement has been increased from 50 to 100 marks for all puerperal women. The weekly allowances and the "nursing money" *(Stillgeld)* for members of an insured person's family and for puerperants who, not being entitled to weekly benefits from the health insurance societies, receive allowances from state funds, have been increased from 1.50 marks and 75 pfennigs, respectively, to 3 marks and 1.50 marks, respectively. In the case of puerperants who are insured personally, there has been no general increase, as their weekly allowances and "nursing money" are determined on the basis of their regular salary, though the lowest range of allowances has been raised here as well. Furthermore, the new law provides for medical treatment for the prospective mothers of all three aforementioned groups in case it is needed at confinement or during pregnancy. The carrying out of this provision depends, however, on whatever agreement in the matter is reached by the physicians and the health insurance societies, in connection with which negotiations are in progress. For the present, at least, prospective mothers will continue to be granted an allowance for the procuring of a physician or midwife in case of trouble during pregnancy, which sum has been fixed at 50 marks, in place of 25 marks, the former allowance. Members of the family of an insured person will still be entitled to the usual weekly allowance in case a confinement occurs within nine months after the death of the insured. The law also extends the limits as regards those who may lay claim to a weekly allowance on the ground of restricted income. In the future, a puerperant is to be regarded as having a restricted income if, during the calendar or fiscal year preceding the confinement, the income of herself and husband, or (if she is alone) her own total income, has not exceeded the sum of 10,000 marks, with an additional allowance of 500 marks for every child. Heretofore the limit of income was 4,000 marks.

Treatment of General Paresis by Inoculations with Malaria and Recurrent Fever

In 1919, Professor Weygandt, the Hamburg psychiatrist, together with Mühlens, professor of tropical diseases (also of Hamburg), began to treat general paresis with inoculations of the parasites of malaria and recurrent fever. At a recent meeting of the Hamburg Medical Association, Weygandt reported the results of his experiments: "As a result, the remissions and the improvement were much more marked than they had been previously when the cases were left untreated or were treated by any of the older methods. In the fifty cases treated for from four to twenty-two months, the following results were secured: ability to resume duties of calling, 26 per cent.; partial resumption of calling, 22 per cent.; ability to work at something, 10 per cent.; ability to work part time, 6 per cent.; domiciliary care now sufficient, 22 per cent.; no improvement, 10 per cent.; progressively worse, 2 per cent. Accordingly, there was a remission in 88 per cent. and a marked remission in 48 per cent. The neurologic and serologic improvement was not equal to the clinical and practical progress. In several cases, the inoculation method was combined with endolumbar injections of arsphenamin. Eight cases of marked remission were demonstrated."

International Congress of Sexual Science

The first international congress for the discussion of sexual reform on the basis of sexual science was held in the Langenbeck-Virchow House in Berlin, beginning September 16, under the chairmanship of Dr. Magnus-Hirschfeld. The session was participated in by an enthusiastic representation of specialists from this country and abroad. Some of the questions with which sexual science deals have of late become known to the general public through the experimental investigations of Steinach on the transformation and rejuvenation of the sexes. In his introductory address, Hirschfeld called attention to the significant position held by sexual science and sexual reform in modern life. The best way to relieve the facts of their odium is to investigate them scientifically and to discuss them publicly, for all forms of life must be treated as the expression of the will of the Creator. Among the many interesting topics scheduled for the later days of the congress, I may mention the lectures on "Die Bedeutung der inneren Sekretion für die menschliche Sexualität" that have been announced by Professor Lipschütz, Dorpat; Professor Weil, Berlin; Freiherr von Reitzenstein, Dresden, and

many others. A prominent place has also been assigned to the subject "Geschlecht im Recht," the importance of which will be discussed by several eminent jurists. The principal topic for the closing day of the congress will be "Sexualpädagogik." Following Hirschfeld's introductory remarks, Professor Mieli, Rome; Professor Pecirka, Prague; Dr. Rütgers, Holland; Professor Lipschütz, Dorpat; Dr. Nyström, Stockholm; Sanitätsrat Jessner, Königsberg, and many other representatives of sexual science and social hygiene, delivered short addresses, in almost all of which attention was called to the international character of science, which, before the war, served to unite all nations. This is the first congress to be held in Germany, since the war, in which representatives of all civilized nations (France excepted) are taking part. As evidence of the trend of events, I would call attention to the remarks of Professor Pecirka and Dr. Jessner, who were the first to receive special assignments; namely, in the universities of Prague and Königsberg, respectively, as instructors in the field of sexual science.

BUDAPEST

(From Our Regular Correspondent)

Sept. 13, 1921.

The Prevention of Tuberculosis in Hungary

Hungary is going to follow the lead given by Norway in attempting to deal with tuberculosis by legislation. The law of the latter country requires that (1) all cases of consumption of the lung and larynx and all deaths caused by the disease shall be notified, and (2) both private practitioners and public medical officers shall instruct such patients as to hygienic precautions while the authorities undertake the disinfection of dwellings and utensils. The health commission has the right of removing to a hospital any person whom they consider dangerous on account of infection. The law further provides against the employment of tuberculous wetnurses as children's nurses and enjoins especial precautions as to the conditions of hotels, factories, workshops, railways, etc. Sweden introduced a less radical law, making notification of deaths by tuberculosis and disinfections compulsory.

This law will come into force soon after the opening of the parliament. Hungary has been considering a new law which has in it many interesting points. The proposals emanate from a commission consisting of those best versed in the tuberculosis needs of Hungary and also of some government officials. The report of this commission deals very fully with the incidence and spread of tuberculosis in Hungary, with tuberculosis in prisons, internment camps, etc., with the hygiene of tuberculosis, with the consideration of Danish, English and American legislation regarding tuberculosis, and with the means taken in other countries for the prevention of the disease. The commission puts forward two sets of proposals, and the government has adopted these recommendations with only slight changes. The first set of suggestions makes notification compulsory. The cases must be notified on a special form by the practitioner in attendance. Notification of all deaths from tuberculosis is also compulsory. Disinfection is to be carried out by the public authorities if it is thought necessary. The carrying out of hygienic measures is placed in the hands of the "health commission," as is also the compulsory removal of any patient to a hospital. In this particular the law is limited, and reserves the right to interfere only if the circumstances appear to necessitate it. Schoolmasters are bound to notify the school commission of any case of tuberculosis among the pupils which come to their knowledge, and the commission then decides whether it is necessary to remove the patient from learning together with other children. Schoolmasters, when applying for posts, must certify that they are free from an infectious form of tuberculosis. A schoolmaster suffering from tuberculosis in an infectious form is to receive a pension of two thirds of the salary which he is drawing at the time, as is also done in Denmark. The penalty for contravention of any part of the law is a fine of from 200 to 2,000 Hungarian crowns, and eventually imprisonment from two to fourteen days.

The commission points out that it is highly necessary that the fight against tuberculosis should not be turned into a fight against the tuberculous. All institutes for the treatment of tuberculosis are to be under the supervision of the ministerial secretary for public sanitation. The minimum number of beds to be reserved in public hospitals for tuberculous patients, and the maximum daily fee charged to the patient must be stated, and are controllable. Even private sanatoriums may be brought under this part of the law. Certain classes of patients receive assistance from the state; this assistance is not to exceed half the fee charged by the institute where they are treated. The state further undertakes to assist in building new sanatoriums. The yearly amount which the state will pay for the tuberculosis movement is to be fixed, but will be revised after ten years.

Ether Ignited During Operation

During an operation for appendicitis performed in Nagyvared in a private sanatorium, it was found that the patient needed more anesthetic and a bottle was opened; accidentally it fell to the ground and the ether fumes were ignited by the flame of the sterilizer. Two of the assistants were burned, one badly, while the operator and the unconscious patient escaped.

Change in the Aorta in Syphilis

Dr. Feldmann, pathologist to the county hospital at Gyula, has devoted special attention to the study of the aorta in syphilitic cadavers. He corroborated the findings of S. Abramow in Germany. In the first recent case, thickening of the intima, consisting chiefly of spindle-shaped cells, embedded in homogeneous intercellular substance, was marked. Portions of this thickened intima were made up of mucoid substance, and the superficial layers consisted of thick, hyaline fibers. In the adventitia there was proliferation of capillaries whose intima was thickened and adventitia infiltrated with round cells which extended into the media. He concluded from his investigations that the difference between syphilitic and ordinary aortitis is only quantitative. The diagnosis of syphilis can be made only if distinct gummas have developed in the walls of the vessel.

Ankylostomiasis in Eastern Europe

Sir Thomas Oliver, professor of industrial diseases in England, on his visit to Hungary and to other parts of Eastern Europe to study miners' diseases, awakened the interest of physicians who have miners for patients. Since Dr. Oliver's visit, special training is given to physicians in the mining districts. Already more than fifty have been educated to combat ankylostomiasis. Also the government has taken every means possible to stamp out the disease. Before any miner is allowed to work he must first pass through the hospital, where his excreta are examined, after which he receives a certificate of health. Since the introduction of this and other measures, the number of cases of ankylostomiasis has decreased very considerably.

The Treatment of Lupus by the General Practitioner

The use of the roentgen ray or the quartz light requires the employment of costly apparatus and special qualifications which are beyond the means or abilities of the general practitioner. An efficient substitute for these methods is recommended by Dr. Justus of Budapest, who applies

commercial hydrochloric acid to the affected surfaces with a cotton-wound toothpick, after freezing the area with ethyl chlorid spray, as advised by Dreuw in Germany. The action seems to be accentuated if the acid is saturated with free chlorin gas. From the cases which he reports and the histologic examinations made, it appears that the acid, when brought into contact with tuberculous tissue, causes a prompt emigration of white blood cells into these areas so that it is impossible to distinguish them. There is also a diapedesis around the vessels. This process does not take place in normal tissues under the same circumstances. When the lupus involves the nose or lip, or in the presence of abscesses or fistulas, a general anesthetic may be necessary. A gray slough forms within a few days after cauterization, and remains for several weeks. When this drops off, the superficial lupus tubercles come away, and if any remain, the treatment may be reapplied once or twice at intervals of three or four weeks. In from three to six months the ulceration becomes covered with epidermis; and if any isolated tubercles persist, these may be punctured with pointed capillary tubes filled with hydrochloric acid. The results obtained are said to be excellent, and three cases have been observed for a year without recurrence. But even if this occurs, it may readily be attacked if the patients are cautioned to present themselves every three months for examination. The method may also be combined with others, especially with the quartz (Finsen) light, as the tubercles are brought nearer to the surface by the cauterization process.

GUAYAQUIL

(From Our Regular Correspondent)

Sept. 1, 1921.

Yellow Fever

According to an official statement of the department of the interior and sanitation, there has not been a single case of yellow fever in Ecuador since May 22, 1919. As General Gorgas hoped, the last chapter of yellow fever seems to have been written in Guayaquil, where the Rockefeller Foundation Medical Commission completed its epoch making work and Noguchi discovered the causative germ of yellow fever. Now that yellow fever is out of the way, the fear of visiting Ecuador has disappeared, and people from all countries are arriving here. In Noguchi's paper on yellow fever in THE JOURNAL, July 16, 1921, p. 181, it was stated that Guayaquil had only 80,000 inhabitants, when as a matter of fact it has a population of 100,000.

The quarantine department is enforcing very rigid measures in order to prevent the importation of yellow fever from Peru, where it prevails now in the provinces of Lambayeque and Libertad. Ships from the Peruvian ports of Pimentel, Salaberry and Eten are placed in quarantine.

Icterus

Noguchi found amoung the wild rats of Guayaquil a leptospira which causes in the guinea-pig symptoms and lesions identical to those caused by *Leptospira icterohemorrhagiae*. This fact should not cause undue alarm, since the same germ has been found in the kidneys of rats in New York and in the trenches, although Inada and Ido's disease remains rare. During the month of June there occurred several cases of "jaundice," both infectious and epidemic. Fortunately it was a very brief outbreak, and there were not more than a dozen cases. The clinicians studied it very thoroughly, among them Prof. J. M. Carbo Noboa, who made dark field studies, cultures and guinea-pig inoculations without reaching any definite conclusions.

Chaulmoogra Oil

The government of Ecuador has been presented by the American government with 2,000 doses of the new chaulmoogra oil preparation used with such good results in Hawaii. Most of it has been sent to the Pifo leprosarium so that it may be tried there and results recorded.

Habit-Forming Drugs

The public health department has ordered all druggists to report monthly the amount of morphin sold, with the name of the physician who prescribed the drug.

Communicable Diseases

The antiplague campaign is being continued, as the disease still persists. About 500 rats are caught daily at a cost of 12 centavos de sucre (about 3 cents) each. It is expected that as soon as the new water supply is installed and ratproof concrete and brick houses replace old frame buildings, this epidemic will go the way of yellow fever.

Smallpox had disappeared from Guayaquil some time ago, but the disease was again introduced from abroad in the early part of the year. A number of cases occurred. The public health department pushed, therefore, vaccination measures. During April and May, 17,000 people were immunized in the city of Guayaquil, where vaccination was declared compulsory. This stopped absolutely the ravages of the disease. The necessary vaccine was furnished not only by the Vaccine Institute of Guayaquil but also the Vaccine Institute of Quito, which was opened recently. The latter, according to a statement of the assistant director of public health of Pichincha, Dr. Miño, furnished 60,000 doses that were used in the eastern part of the country.

It is to be regretted that the hookworm disease campaign, which began under such good auspices, had to be suspended temporarily because of lack of funds.

New Director of Public Health

The national congress has appointed Dr. Wenceslao Pareja general director of public health. Dr. Pareja is well known, and was one of the physicians who cooperated with the Rockefeller Foundation Commission in the yellow fever campaign. He is in great part responsible for the recent progress in public health work in Ecuador.

Marriages

WALTER H. WINTERBERG, Colonel, M. C., U. S. Army, to Mrs. Inez Koster Bauer, both of San Francisco, September 29.

CREED CORNELIUS GLASS, Meyersdale, Pa., to Miss Hazel McGilvery of Pittsburgh, at Meyersdale, recently.

EUGENE MCCABE, Emerson, Neb., to Miss Anna V. Dougherty of Newcastle, Neb., September 7.

GEORGE EDWARD WELLS, Baltimore, to Miss Pauline Stotler Wilson of Keyser, W. Va., September 26.

LINWOOD C. GARDNER, Osceola, Iowa, to Miss Gladys Fletcher of Ocheyedan, Iowa, recently.

CHARLES F. ULRICH, Valentine, Neb., to Miss Rose McGovern of Omaha, August 30.

GEORGE MARQUIS, Colfax, Iowa, to Miss Ola Rae Cook of Woodson, Kan., recently.

ROGER PINKERTON, Chicago, to Miss Gretta Ritchie of Sterling, Kan., August 18.

W. A. MCNICHOLS, Osceola, Iowa, to Miss Ester Zook of Adair, Iowa, recently.

ALEXANDER J. GILLIS to Miss Helen Costello, both of Baltimore, September 28.

RUFUS E. LEFEVER to Miss Anne N. Regar, both of Reading, Pa., recently.

EDWIN G. DAVIS to Miss Dorothy Ballach, both of Omaha, September 20.

ORRIE GHRIST, Ames, Iowa, to Miss Eva Kurtz of Nevada, July 4.

Deaths

George H. Saltmarsh, Lakeport, N. H.; Dartmouth Medical School, Hanover, 1884; member and president, 1896-1899, of the New Hampshire Medical Society; former president of the Belknap County Medical Society; served as mayor of Laconia for two terms; member of the state legislature in 1895; former senator for the seventh district; president of the Laconia Hospital; died suddenly, September 28, from heart disease, aged 62.

Thomas Joseph Battle, New York; Bellevue Hospital Medical College, New York, 1897; member of the Medical Society of the State of New York; former member of the New York City Board of Health; clinical assistant, West Side German Hospital and School, and Polyclinic Medical School and Hospital, New York; died, September 28, aged 50.

Joseph George Savannah, Farmingdale, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1917; lieutenant, M. C., U. S. Army, during the late war; attending physician, Tuberculosis Preventorium for Children, Farmingdale; member of the staff of the Ann May Memorial Hospital, Spring Lake; died, October 1, aged 34.

Americ Goerge D'Amico, New York; University and Bellevue Hospital Medical College (Medical Department of the New York University), New York, 1919; died, August 28, from injuries received when the automobile in which he was riding was hit by a train, near Somerville, N. J., aged 25.

Samuel L. Engsminger, Crawfordsville, Ind.; Miami Medical College, Cincinnati, 1874; Civil War veteran; practitioner for nearly half a century; formerly surgeon to the Culver Union Hospital, Crawfordsville; died, September 25, from cerebral hemorrhage, aged 77.

Carl George Turner ● Canton, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1896; died, September 26, in an ambulance while being conveyed to the county Hospital, Denver, from heart disease, when on a motor trip to California, aged 51.

Orville C. Walker, Alliance, Ohio; Cleveland College of Physicians and Surgeons, Ohio Wesleyan University, Cleveland, 1913; member of the Ohio State Medical Association; was shot and killed by an unknown assassin, September 28, aged 33.

Charles W. Grimes, Norristown, Ga.; Eclectic Medical Institute, Cincinnati, 1884; Kansas Medical College, Topeka, 1899; was shot by the husband of a patient, and died in the Franklin Sanatorium, at Swainsboro, September 16, aged 60.

Joseph K. Crowder, Birmingham, Ala.; Memphis Hospital Medical College, Memphis, Tenn., 1912; member of the medical staff of the Birmingham Infirmary, where he died, September 22, following an operation, aged 43.

Clarence Stanton Ward, Warren, Ohio; University of Michigan, Ann Arbor, 1874; Bellevue Hospital Medical College, New York, 1875; died, September 5, in Los Angeles, from cerebral hemorrhage, aged 67.

Isabelle Mathison Rankine, Brooklyn; New York Medical College and Hospital for Women, New York, 1882; member of the Kings County Medical Society; died in Tappan, N. Y., September 26.

William Tidball, Sentinel, Okla.; Memphis Hospital Medical College, Memphis, Tenn., 1887; member of the Oklahoma State Medical Association; died, September 22, from paralysis, aged 64.

Samuel Coopersmith, Canton, Ohio; Western Reserve University School of Medicine, Cleveland, 1920; chemist for the city health department and the Mercy Hospital; died, August 16, aged 33.

Hiram Lee Smith, Geneva, Neb.; Eclectic Medical Institute of Cincinnati, 1857; practitioner for over fifty years; served as mayor of Geneva for three terms; died, September 18, aged 92.

Pleasant M. Haraway, Marlow, Okla.; Medical College of Alabama, Mobile, 1890; member of the Oklahoma State Medical Association; died, July 28, from cerebral hemorrhage, aged 59.

Joseph Wade Bone, Sapulpa, Okla.; Barnes Medical College, St. Louis, 1897; member of the Oklahoma State Medical Association; died, July 27, from cerebral hemorrhage, aged 54.

● Indicates "Fellow" of the American Medical Association.

J. H. Morgan, Molena, Ga.; Atlanta Medical College, Atlanta, 1896; leaped from the roof of his residence while temporarily deranged, and was killed, in September, aged 51.

William R. Stover, Bristol, Va.; Baltimore University School of Medicine, 1900; died, September 14, from myocarditis, aged 45.

Benson E. Sager, Cleveland; Medical Department, Western Reserve University, Cleveland, 1892; member of the Ohio State Medical Association; died, September 26, aged 61.

William Henry Anderson, Louisville, Ky.; Medical Department, University of Louisville, 1872; practitioner in Louisville for over fifty years; died, September 23, aged 78.

John Leland Jones, Los Angeles; Louisville (Ky.) Medical College, 1872; Kentucky School of Medicine, Louisville, 1883; died suddenly, September 30, in his office, aged 71.

Charles Alexander McKay, Emerado, N. D.; University of Toronto, Ontario, 1905; was killed, September 26, by a rifle bullet through the mouth, self-inflicted, aged 44.

George W. Pettey, Grand Rapids, Mich.; Cleveland Medical College (Western Reserve University), Cleveland, 1873; was found dead in bed, September 21, aged 70.

Mark R. Nichols, Bellevue, Ohio; Medical Department of Western Reserve University, Cleveland, 1881; died, October 1, from carcinoma of the stomach, aged 67.

William Basil Levens, Creighton, Mo.; Barnes Medical College, St. Louis, 1893; member of the Missouri State Medical Association; died, August 14, aged 56.

Andrew Jackson Brewer, Coweta, Okla.; University of Louisville, Ky., 1879; member of the Oklahoma State Medical Association; died, July 14, aged 61.

Walter Bennet Cory, Cleveland; College of Physicians and Surgeons (University of Illinois), Chicago, 1901; died, September 24, from heart disease, aged 43.

Marian A. Dale, New York; New York Medical College and Hospital for Women, New York, 1884; died at Mount Vernon, N. Y., September 17, aged 72.

Melvin B. Squires, Flatwoods, W. Va.; College of Physicians and Surgeons, Baltimore, 1893; was killed, September 26, in a railway accident, aged 53.

William James Young ● Stockton, Calif.; Cooper Medical College, San Francisco, 1897; was found dead in the bath, September 22, from heart disease.

William A. Strother ● Boonsboro, Va.; University of Virginia, Charlottesville, 1905; was shot and killed, September 24, aged 37.

John C. Gill, Cleveland; Western Reserve University School of Medicine, Cleveland, 1860; died, September 20, at the home of his son, aged 84.

Joseph E. Dale ● Fort Collins, Colo.; Cincinnati College of Medicine and Surgery, 1894; died, September 23, from pernicious anemia, aged 52.

Sidney W. Dodge, Massena, N. Y.; University of Vermont, College of Medicine, Burlington, 1875; died, September 22, from diabetes, aged 76.

John W. Denison, Parsons, Pa.; University of Michigan, Ann Arbor, 1885; died, September 18, at the City Hospital, Wilkes-Barre, aged 60.

John B. Hershey, Trinidad, Colo.; Homeopathic Hospital College, Cleveland, 1879; died, September 19, from cerebral hemorrhage, aged 65.

Sherman M. Kline ● Scranton, Iowa; College of Physicians and Surgeons, Baltimore, 1900; died, September 22, from diabetes, aged 47.

Charles H. Smith, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1876; died, September 20, aged 67.

Thomas D. Ford ● Plainfield, Iowa; Rush Medical College, Chicago, 1871; died, July 19, from carcinoma of the throat, aged 73.

Wade Hampton Pevey ● Forest, Miss.; Tulane University of Louisiana, New Orleans, 1901; died, September 16, aged 52.

Hugh E. McCaw, Lincoln, Neb.; Rush Medical College, Chicago, 1879; died, August 20, at Hastings, Neb., aged 63.

Samuel A. Elder, High Shoals, Ga.; Atlanta College of Physicians and Surgeons, 1898; died recently, aged 57.

Claudius B. Bradford, Oklahoma City; Kansas City Medical College, 1882; died recently, aged 66.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

THOMAS WEBSTER EDGAR

Tired Rabbits for Diabetes; Ring-Tailed Monkeys for Sex Stimulation

During the last two or three years THE JOURNAL has received inquiries regarding one Thomas Webster Edgar, M. D., of New York City, first, relative to his alleged treatment for diabetes and more recently about his "monkey gland" treatment for sex stimulation. Here is one from a physician in Washington:

"Have you any knowledge of the efficacy of a serum made from the pancreas of rabbits for the relief or cure of diabetes? It is made by Dr. T. W. Edgar of 766 West End Ave., New York City."

And this from a layman in Pennsylvania:

"Last year there was published in the *New York Herald* an account of the new treatment for diabetes in which a serum was injected in the veins and as a result it was claimed that over sixty-five per cent. of the treatments made were successful. The account further stated that they proposed to establish some sort of a sanitarium in New York City used especially for the treatment. The writer having mislaid the account, wrote the *New York Herald* as to the doctor who had charge of it and in return was given the name and address. Dr. Edgar in a letter under date of last year stated that the cost of the treatment was $300.00, payable beginning of the treatment, and he gave very little information as to the success of it, with the exception that if the treatment did not give the desired effect after the end of three months, it would be continued without any further cost. The writer wrote and asked him the names of one or two of the patients who had been cured, because it seemed rather unusual that if the treatment were a success, it was necessary for a patient to pay the cost of the treatment in advance. To that letter I have never received a reply."

While a physician from Illinois writes:

"I am enclosing a clipping from a Chicago paper relative to Dr. Thomas Webster Edgar of New York and his operation for transplanting the glands of ring-tailed monkey. I note that he is a member of the New York County Medical Society! What is there to this? I have seen no mention of these wonders in THE JOURNAL."

Thomas Webster Edgar was born in 1889. The records show that he was graduated in medicine by the University and Bellevue Hospital Medical College in 1913, and was licensed to practice medicine in the State of New York the same year. In March, 1919, an article by T. Webster Edgar appeared in the *New York Medical Journal* on "Diabetes Mellitus." In this Edgar gave a theory of the cause of diabetes mellitus and stated that he had "treated successfully, twenty cases of definite diabetes." In the article he spoke positively of the successful results he had obtained by the "intramuscular injections of my diabetic serum." No information was given regarding this serum except that he mentioned vaguely that it was "prepared from normal blood after the animal is exercised to the point of fatigue."

Photographic reproduction (reduced) of a few of the newspaper items that appeared in various parts of the country regarding Thomas Webster Edgar's alleged serum for diabetes.

A few days after the appearance of this article in the *New York Medical Journal* newspaper articles appeared regarding a cure for diabetes perfected by "Dr. Thomas Webster Edgar, 766 West End Avenue, New York City." According to these reports Edgar said:

"I tried the blood of rabbits and found what I wanted. In obtaining the blood I first put the rabbit upon a treadmill and keep it there until it reaches a stage of fatigue. Then I draw the blood, and after heating it to 60 degrees centigrade separate the corpuscles from the serum. When the serum has been treated after the method I have discovered, I inject it immediately subcutaneously.

"I have attained success in 65 per cent. of my cases and I have had 100 cases. I do not say that the cure is infallible, but I am now certain that it will work in most cases, particularly when the patient observes the rules laid down and undergoes faithful treatment."

Photographic reproduction (greatly reduced) of a small portion of the publicity that has been given to Edgar relative to his operation for "sex stimulation" by the transplantation of the glands of ring-tailed monkeys!

In April, 1919, a physician in Kansas wrote to Edgar at the request of a diabetic patient asking for information about the "serum." Edgar replied that it would be impossible to send the physician any of the serum for administration unless the "patient is willing to pay me for the cost of same, which will be approximately the sum of $25." He stated further that, in a few months' time, he hoped to be able to manufacture the serum in larger quantities which would "more than cut the expense in half."

In the same month a layman in Chicago who read the newspaper story wrote to Edgar and asked for details regarding terms and the arrangements that would have to be made to take the "treatment." Edgar replied that he expected to be in Chicago in a few weeks' time and would see the man in consultation with his regular physician, that he would administer the first injection and give instructions to the physician as to subsequent injections. Edgar added:

"My custom is to have all fees paid in advance and my charge is $200.00 by certified cheque or money-order."

A layman in one of the smaller cities of New York wrote to Edgar in May, 1919, and received a reply from Edgar's secretary stating that the treatment extends "over a period of three months, cost $150." He was also told that the serum could be sent to his physician for administration "for the sum of $25 prepaid by money-order." The letter closed with the statement that Edgar "has been very successful with the serum."

A layman in South Carolina who wrote to Edgar in June, 1919, was told that the treatment as administered by Edgar "extends over a period of two months; fee $300" and that if he wanted the serum administered by his own physician the cost would be "$50 prepaid."

In May, 1920, Edgar had another article on diabetes, also in the *New York Medical Journal*. In this, too, he refers to his serum in the following words:

"In conclusion I may state that I have been able to produce some rather startling results by the use of my serum, which is prepared from the blood of rabbits after they have undergone a series of maneuvres capable of activating the various internal secretory glands to increased action. The serum contains the internal secretions in hormone form."

Gradually the newspaper publicity on Edgar's diabetic "serum" died down. Then, in November, 1920, there appeared —again in the *New York Medical Journal*—an article by

Edgar on "Sterility, Sex Stimulation and Endocrines." Edgar there stated that he wished to place himself "on record as being interested in sex stimulation" and that he wanted to notify the profession that he had another serum which he was using "with success in the treatment of this condition." Thus:

". . . I feel entitled to state that I have a distinctly beneficial serum for the alleviation of presenile and senile deficiency; and that my product is capable of producing a new lease of life in those whose functions have been reduced to a minimum."

How long Edgar has been featuring his "serum" for "sex stimulation" it is difficult to determine, but during the last year the newspapers have carried sporadic reports of alleged remarkable results produced by "Dr. Thomas Webster Edgar of 766 West End Ave., New York," through the transplantation of the "interstitial gland" taken from "a special species of orangoutang." A layman who wrote to Edgar some months ago regarding this "gland implantation" received a letter from Edgar's secretary stating that the treatment "has been most successful in all cases" and assuring him that "the experimental stage has been passed, and the operation is advised in all cases presenting symptoms of presenility or age." A week later the same man received a letter written by Edgar himself in which was reiterated the claim that all of the operations had been successful. Edgar added that he was now treating all cases "by operation instead of the serum," and that "the fee for operation is $500, inclusive of the sanitarium," the patients remaining in the "sanitarium" "for from two to three days." A month or two later the prospective patient received another letter signed "Thomas Webster Edgar, M.D.," assuring him that "the effect is permanent, and does not wear off. No ill effects can possibly result."

Commencing Oct. 1, 1921, a series of sensational articles appeared regarding one of Edgar's alleged monkey-gland implantations performed on an individual described as "one time lawyer and then a writer." These articles purport to be written partly by one of the newspaper staff, partly by the man undergoing the "operation" and at least one by Thomas Webster Edgar. The material is played up in the style typical of yellow journalism. In addition to repeated pictures of the individual who is being operated on, there also are given pictures of Thomas Webster Edgar and one of his "ring-tailed monkeys." Doubtless the "story" has sold many newspapers. Its sensational character, the element of mystery and above all its sex slant will appeal to that large class of newspaper readers that hunger for stuff of this sort. Doubtless, too, it has proved a large advertising asset for Thomas Webster Edgar.

The statement that appears in the series to the effect that Edgar "is a member of the County Medical Society of New York" is incorrect. Edgar is not a member.

The further newspaper claim that Edgar is "an authority on glandular transplantation" should also be accepted with reservations. "Authorities" are created with ease in the pages of newspapers. Edgar may possibly be termed an authority in a newspaper or, shall we say, Pickwickian sense.

Correspondence

RESTAURANT TREATMENT IN INDUSTRIAL ACCIDENT CASES

To the Editor:—Histories of many industrial accident patients reveal loss of weight during the first few weeks following the injury. Convalescence from this point onward seems unduly prolonged with numerous orthopedic patients, especially with those who are unable to live at their own homes, so that malingering is suspected not infrequently. Inquiry will disclose that, among a considerable number of these patients, inadequate and poorly balanced diets are necessary in order to make the small sum of compensation money feed the entire family. Such injured persons are suffering from effects of mechanical injuries plus effects of deficiency peculiarities in diet. The latter defects appear sufficient to retard the recovery of normal functions in injured tissues. For repair of damage there must be material at hand that will make repair possible. Numerous back strains and lesions about joints drag along indefinitely sometimes until better diets are secured. When "run down" persons can be put in hospitals that furnish a good variety and quantity of food, there will be noticed usually a slow increase in weight along with steady improvement in the person's general condition, together with progressive subsidence of pathologic symptoms and signs locally in the injured region. Insurance companies, however, object to furnishing expensive hospital care in nonsurgical cases for long periods of time, unless indications for hospital treatment are extremely clear.

Owing to this difficulty, it occurred to me that one square meal a day, supplied at any good low-priced restaurant, would yield variety and volume of additional food needed for quick repair in some instances, and that it could be furnished at a rate that would be attractive from an insurance business standpoint. Accordingly, with the cooperation of Mr. Dudley M. Holman, a first trial was made on a patient from the Bethlehem Shipbuilding Corporation, Limited. Arrangements can be made directly between a restaurant and the insurance company so that patients simply have to go regularly, as they would to a physician's office, and under these circumstances they may eat more liberally than when they are depriving their families at the home table. Diets are prescribed, of course, in most industrial cases when occasion demands; yet special attention to diets under the circumstances mentioned seems to have been neglected commonly among orthopedic patients. The method has such wide applicability that I venture to draw attention to the plan before a long series of patients has been collected. It is needless to predict that this may prove to be an exceedingly popular treatment with patients, and that it must be surrounded with proper restrictions to prevent its abuse. When rightly employed, it can prove of great benefit to patients and, simultaneously, to companies in which they are insured.

HERMAN W. MARSHALL, M.D., Boston.

HAY-FEVER PALLIATION: A NEW USE FOR THE INFLUENZA MASK

To the Editor:—Those familiar with the pollen therapy of hay-fever will agree that hay-fever is best treated by making skin tests with the pollens growing in the vicinity in which the patients live, and then treating them preseasonally by extract of the pollen of the plant to which the patient is sensitive. There are patients, however, who are not seen until after the hay-fever season begins, so that the preseasonal method of treatment is not possible. For patients seen only after their hay-fever symptoms are already present, the best treatment is to send them away to some place where the plant to whose pollen they are sensitive does not grow. This is the ideal treatment for this class of patients. Unfortunately, there are many of these patients who for one reason or another cannot get away. What is to be done for them?

It is well known that seasonal treatment by pollen extracts is about as unsatisfactory as preseasonal treatment by the same method is satisfactory. Palliation by medication too, either locally or internally, is in the great majority of patients also absolutely unsatisfactory. In these patients we have recently been using the influenza mask with a great deal of satisfaction. It should be made of three thicknesses of finest butter cloth, as described by Doust and Lyon (Face Masks in Infections of the Respiratory Tract, THE JOURNAL, Oct. 12, 1918, p. 1216), and we have found in practice that

it is best used moist, wrung out of ordinary tap water and put on to cover the mouth and nose in this moist condition; when it dries out it should be wet and wrung out again.

Many patients would not or could not wear this mask in the daytime; but, as is well known, the majority of hay-fever patients suffer most at night, after retiring. It is then that the nose stops up; it is necessary to open the mouth to breathe and, the pollen grains now being drawn into the trachea and bronchi, set up asthmatic symptoms. The influenza mask, properly made, moistened and put on at going to bed and worn during the night, will, in a majority of patients, greatly mitigate these symptoms and allow the patient to have a good night's rest.

SAMUEL H. WATSON, M.D.,
CHARLES S. KIBLER, M.D.,
Tucson, Ariz.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

WILDBOLZ AUTO-URINE TEST FOR TUBERCULOSIS

To the Editor:—If the results of the auto-urine test for active tuberculosis are due to a reaction of antibodies in the circulation with, or in response to the stimulation of, antigens of the urine injected into the skin, is not this test merely a test for any antigen in the urine and its corresponding antibody in the circulation? Has the reaction been tested out in diseases other than tuberculosis? Has it been found that when supposedly there are in the circulation antigens and antibodies of other diseases alone, this reaction will be negative? If this has not been found, would not the results of the test as a test for tuberculosis approach reliability only when the injection of urine is made into the skin of a person known to have tuberculosis and tuberculosis only? For otherwise it would seem to be merely a test for the presence of any infectious disease whatever.

P. D. WOODBRIDGE, M.D., Boston.

ANSWER.—The questions brought up imply that "tuberculin" (in the Wildbolz reaction obtained from active foci and excreted in the urine) is an antigen in the accepted sense of the term, and in the second place that the skin reaction that is elicited is an antibody reaction.

Tuberculin differs from our common antigens in that it is probably a protein fragment of relatively small molecular size, relatively nontoxic and nonantigenic for normal animals and having peculiar physical properties (being coctostable, relatively diffusible, etc.).

While we may find no agreement as to the mechanism of the tuberculin reaction (the cutaneous reaction being under consideration), the experimental evidence is quite clear that the tuberculous skin reactions have no relation to the relative antibody concentration in the body fluids.

Properly to understand the questions involved, it must be kept in mind that the Wildbolz reaction differs in no essentials from the usual reaction obtained with tuberculin. The reaction is accelerated by iodids and by thyroid extract; it is usually negative during menstruation, pregnancy, acute infections and cachexia, as well as the terminal stages of tuberculosis. On the other hand, skin reactions elicited with bacterial and other antigens (typhoid, gonococcus, placenta, etc.) other than tuberculin are unreliable, and when present do not indicate the relative immunity or antibody concentration of the organism.

Therefore the test is not merely a test for any antigen in the urine and its corresponding antibody in the circulation.

The test has been tried in a number of acute infectious diseases and metabolic disorders and has been found negative. In leprosy the test may at times be positive with the patient's own urine, as well as with the urine of tuberculous patients, but is not as a rule as well marked as is the tuberculin reaction in the leprous individual.

The test is not one that is positive in the presence of any infectious disease.

Perhaps a concrete example will best answer the general question raised in the inquiry. If we are dealing with a patient ill with both an active tuberculosis and typhoid fever, the urine will contain both antigens, but the auto-urine injection will give a negative result (because of the common suppression of the allergic response during acute infections). With recovery of the patient from the typhoid infection the test may become positive, tuberculin being excreted and the allergic response becoming normal. There being no typhoid antigen present after the recovery, the reaction to it would be excluded. Even though we took pure typhoid antigen and made a skin test at this time (typhoidin reaction), the reaction to it would be found to be very irregular.

FUCHSIN-SULPHUROUS ACID TESTS FOR METHYL ALCOHOL

To the Editor:—Having occasion to test for methyl alcohol in ethyl alcohol, I used the U. S. P. method as given in the latest edition of Warren's translation of Autenrieth's "Detection of Poisons."

I followed the instructions precisely except in the preparation of the fuchsin-sulphurous solution. Being unable to obtain any sodium bisulphite, I substituted 11 gm. of dried sodium sulphite for 9 gm. of sodium bisulphite (containing the same amount of sulphur dioxid) and used 20 c.c. of hydrochloric acid as I had twice the amount of sodium to deal with. I obtained an orange colored solution.

On proceeding with the test I obtained a deep purple color, which did not fade, with the sample containing methyl alcohol, while the control containing only ethyl alcohol became almost colorless. In other words, the reaction described in the Simons-Denigès method was obtained.

The test as described seems quite sensitive. I wonder whether it is to be depended on. Any enlightenment you can give me on this subject will be appreciated.

In answering, please omit my name and address.

S. W. S., South Dakota.

ANSWER.—The substitution of sodium sulphite for sodium bisulphite in molecular amounts and doubling the amount of hydrochloric acid U. S. P. in preparing the fuchsin sulphurous acid test solution should not affect appreciably its reliability. In fact, the Elvove improvement of the U. S. P. fuchsin sulphurous acid test solution is as follows:

Dissolve 0.2 gm. of fuchsin in about 120 c.c. of hot water and cool to room temperature. Dissolve 2.0 gm. of sodium sulphite U. S. P. in 20 c.c. of water and mix this solution with the fuchsin solution. Then add 2 c.c. of hydrochloric acid U. S. P. and dilute with water to 200 c.c. (J. I. E. C. 9:295 [March] 1917).

The Denigès test depends on the presence of an aldehyd group; hence the liquid to be tested should be first treated in such a manner that aldehyds or other interfering substances are not present. After this is accomplished, the alcoholic solution is oxidized with potassium permanganate, thus converting any methyl alcohol to formaldehyd, which latter will then react with the fuchsin sulphurous acid solution giving the characteristic color. Under these conditions the test is both sensitive and dependable. The "Detection of Methyl Alcohol" was discussed in last week's issue in Queries and Minor Notes (THE JOURNAL, Oct. 8, 1921, p. 1199).

POTASSIUM MERCURIC IODID

To the Editor:—In THE JOURNAL, June 18, 1921, in an abstract on the effects of germicides on the gonococcus, potassium mercuric iodid was mentioned. Please inform me where this may be procured, and where I may be able to obtain data as to strength of solutions, etc.

P. O. BROWN, M.D., San Antonio, Texas.

ANSWER.—In the original article, Swartz and Davis (*J. Urol.* 5:235 [March] 1921) state that they prepared their potassium-mercuric iodid solution by dissolving mercuric iodid in an excess of potassium iodid solution, forming potassium mercuric iodid. As this is a reversible reaction, an excess of potassium iodid is necessary in order to maintain the mercuric iodid in solution. The dilutions of the potassium mercuric iodid were calculated on the amount of the double salt (K_2HgI_4) present. The authors found that solutions as dilute as 1:40,000 killed gonococci in twenty minutes and may be used at a concentration as high as 1:200. Clinical trials were not given; also the gonococcus is much less resistant than other organisms. The strengths which have been recommended by different authors for various disinfecting uses are from 1:1,000 to 1:10,000. The solution may be prepared in the manner indicated above, or by dissolving a definite amount of the prepared salt, potassium mercuric iodid, in water. In New and Nonofficial Remedies, 1921, two products are described: "Mercury and Potassium Iodide-Merck," Merck & Co., New York, and "Soloid Mercuric Potassium Iodide," Burroughs Wellcome & Co., New York and London.

V. 7
1921

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 8-9. Sec., Reg. Bd., Dr. J. W. Walker, Fayetteville; Sec., Homeo. Bd., Dr. Geo. M. Love, Rogers; Sec., Eclectic Bd., Dr. Claude E. Laws, 803½ Garrison Ave., Fort Smith.

CALIFORNIA: Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 135 Stockton St., San Francisco.

CONNECTICUT: Hartford, Nov. 8-9. Sec., Reg. Bd., Dr. Robert L. Rowley, 79 Elm St., Hartford.

CONNECTICUT: New Haven, Nov. 8. Sec., Homeo. Bd., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

ILLINOIS: Chicago, Oct. 19-22. Director, Mr. W. H. H. Miller, Springfield.

IOWA: Des Moines, Nov. 1-3. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.

MAINE: Portland, Nov. 8-9. Sec., Dr. Frank W. Searle, 775 Congress St., Portland.

NEBRASKA: Lincoln, Nov. 9. Sec., Mr. H. H. Antles, Capitol Bldg., Lincoln.

NEVADA: Carson City, Nov. 7. Sec., Dr. Simeon L. Lee, Carson City.

NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. Alexander MacAlister, State House, Trenton.

NORTH CAROLINA: Greensboro, Dec. 3. Sec., Dr. Kemp P. B. Bonner, Morehead City.

SOUTH CAROLINA: Columbia, Nov. 8. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TEXAS: Dallas, Nov. 15-17. Sec., Dr. T. J. Crowe, 918-19 Dallas County Bank Bldg., Dallas.

THE EDUCATIONAL FUNCTION OF AN OUTPATIENT DEPARTMENT

GEORGE E. SHAMBAUGH, M.D.
CHICAGO

It has become generally recognized that the hospital in which the teaching function is emphasized is a better place for the care of patients than the hospital in which this function is neglected. In exactly the same way, the outpatient department which is a teaching center is capable of providing better care for patients than an outpatient department which is not at the same time a teaching institution. Indeed, one may even say that the greater the emphasis that is given toward utilizing the facilities of an outpatient department for teaching, the better the care, as a rule, that is given the patient. An ideal outpatient department is one organized for providing instruction in clinical medicine. In a broader sense, the properly equipped and properly conducted outpatient department becomes a valuable educational center for the entire community. The importance of this correlation between education and care of patient is sometimes overlooked.

The primary aim of a hospital or of an outpatient department is to provide the best possible care for the patient. It is only when this principle is kept foremost that the proper atmosphere exists for the teaching of medicine. The student who attempts to study disease without cultivating an interest in the patient himself is losing the first essential in his preparation to practice medicine. When the student has not the right attitude toward the patient, no amount of technical skill will ever suffice to give him a proper preparation. Educational institutions in passing on the requirements for admission to the medical course should find a more efficient method of recognizing this all-important principle. A student who is particularly clever in passing examinations may be particularly unfit, because of his attitude toward the patient, for a profession such as the practice of medicine.

The failure to give proper emphasis to the principle that the interests of the patient should always be foremost has brought a most harmful influence into the practice of medicine. For example, students have been taught the technic of operations, particularly in the specialties, who have acquired no adequate appreciation of the proper indications for these operations. Such training is oblivious of the best interests of the patient, who is constantly in danger of being the victim of unnecessary surgical procedures at the hands of men who have acquired technic of operations but who know little of the much more difficult problem of recognizing their proper indications.

I wish to point out the features which are essential in an outpatient department before it is prepared to fulfil its rôle as a proper place for the care of patients or as a center for teaching the principles of medicine. The first is adequate equipment. Without this it is equally impossible to provide proper care for the patient or to give the student the means for building up his store of knowledge or of technical skill. The fundamental importance of a proper equipment has been sadly overlooked in our much neglected outpatient departments. Many of these exist with practically no equipment beyond the little that an attending physician or surgeon may feel forced to bring with him. It is not alone the patient who suffers from this lack of proper equipment. An outpatient department as an educational institution for the student of medicine and for the community at large requires a proper equipment. This should be not only an adequate equipment but also, for obvious reasons, as far as feasible, an ideal equipment. It should serve as a constant object lesson to the patient as well as to the student of medicine. For these reasons, it should be a model sanitary equipment.

The importance of hospital facilities both for providing care for patients and for the training of medical students should not be underemphasized; but I desire to call attention to the outpatient department as a proper place for the care of a great many patients who are now being hospitalized because of the neglected state of facilities in the outpatient departments. Unnecessary hospitalization of such cases incurs an enormous expense, a small fraction of which, if spent in providing proper facilities and equipment for the outpatient department, would render such hospital care superfluous. The proper study of many cases, both in diagnosis and treatment, can be carried out very largely in a properly equipped outpatient department. How this principle applies to the specialties is now pretty well recognized. The fact that it applies almost as fully to general medicine and general surgery is still largely overlooked. There seems to be a more or less widespread impression that general medicine and particularly general surgery can be taught only from patients confined in the hospital. This is a mistake. Many of the principles of diagnosis and treatment in general surgery and general medicine can be taught, on the whole, as satisfactorily in a properly equipped and properly organized outpatient department as can such specialties as otolaryngology.

It is absolutely necessary for the proper conduct of an outpatient clinic that definite hospital facilities be provided for each department for such cases as require hospital care. On the other hand, as already pointed out, an outpatient department properly equipped and with its work properly organized is able to accomplish much of the preliminary study as well as much of the subsequent care of cases which require hospital treatment. This cooperation of outpatient department and hospital will reduce the length of stay now required of a great many hospital patients.

Next in importance to proper equipment of an outpatient department is an adequate personnel of assistants. It is here that the value of the correlation of the care of patients and the teaching function becomes especially evident. A great deal of the work in an outpatient department is necessarily in the nature of routine work which can be carried out adequately, under direction, by more or less inexperienced medical assistants. The obligation on the part of the regular staff of keeping up such work becomes as tiresome as it is unproductive, with the result that there is a constant tendency to neglect much of this routine. With an outpatient department manned with a staff of clinical assistants, this routine work can be taken care of at the same time that it is providing the ideal training school for these medical assistants. The utilizing of graduate clinical assistants for carrying on

the work in the outpatient department facilitates such instruction of the undergraduate medical student as can properly be provided by this department. An outpatient clinic properly equipped and properly organized becomes the ideal training school for a large part of the graduate instruction in clinical medicine, such as is necessary in the preparation of the specialist, whether this be for the practice of ophthalmology and otolaryngology, or internal medicine and general surgery. In each outpatient department, in order that proper care may be given to the patient, it is necessary that there should be a suitable corps of clinical assistants, each serving for a definite period of perhaps not less than one year. These clinical assistants become an integral part in the organization of the outpatient clinic. It is important that the work of the department be organized so that the duties of these assistants may be progressive throughout their course, whether this be one year or longer, new assistants beginning each period as the work of the older assistants progresses. It is of the greatest importance in surgery and in the surgical specialties that the work of these clinical assistants in examination and diagnosis be pursued to the point at which they will be able to recognize the proper indications for surgical treatment, before they are taught the technic of operations or allowed to assist in operative work.

There is great need in this country for proper facilities for those graduates in medicine who desire to specialize in internal medicine, general surgery, or such subjects as ophthalmology or otolaryngology. Adequately equipped and properly organized outpatient departments are the proper educational centers, and the system of clinical assistants is the method of providing the proper foundation for such special preparation. Instruction by short intensive courses and clinics, as provided in our so-called postgraduate schools, does not provide the proper training, even when continued over a period of months or years. Proper training consists in the student's doing the actual work himself. When the student has finished his undergraduate medical course, the period for spoon-fed instruction should be over. From this time on he must do his work independently, under direction, but not by course taking.

A minimum of one full year spent as clinical assistant in an outpatient department, during which half of each day is devoted to the clinical study of cases, and the other half day to the fundamental sciences in the laboratories of the university, would form the proper foundation for those desiring to specialize in medicine. If this year's work can be followed by serving as resident in a special or teaching hospital for a period of one or more years, we may feel assured that much of the charlatanism that now impregnates the practice of general surgery and such subjects as ophthalmology and otolaryngology will largely disappear. Our aim should be to provide adequate facilities and proper equipment. The student must learn to do his work independently.

This cooperation of the teaching function with the care of patients gives the ideal outpatient department for the care of patients, and at the same time provides the proper method for training those who desire to do real graduate work.

122 South Michigan Avenue.

Missouri June Examination

Dr. Cortez Enloe, secretary, State Board of Health of Missouri, reports the written examination held at St. Louis, June 13-15, 1921. The examination covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 95 candidates examined, 88 passed and 7 failed. Fourteen candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Louisville Medical Department		(1921)	80.9
Harvard University		(1920)	87.3
St. Louis University School of Medicine		(1921)	79.8, 80.1, 80.5, 80.7, 80.9, 81, 81, 81.1, 81.4, 81.7, 81.7, 82, 82.1, 82.1, 82.3, 82.4, 82.7, 82.8, 82.8, 82.9, 83.1, 83.1, 83.2, 83.2, 84, 84, 84, 84.3, 84.4, 84.6, 85.3, 85.5, 86.1, 86.2, 86.2, 86.7, 87, 87, 87.1, 87.1, 87.3, 87.4, 87.4, 88, 88.7, 88.7, 89.1, 89.4, 89.5
Washington University Medical Department		(1921)	79.4, 80, 81.4, 82, 82.1, 82.1, 83, 83.1, 83.1, 83.8, 84.2, 84.4, 84.5, 84.8, 85.2, 85.5, 85.8, 86.1, 86.1, 86.4, 86.5, 86.6, 86.6, 87, 87.4, 88.7
Cornell University		(1908)	88
Ohio State University College of Medicine		(1921)	82.1
Hahnemann Medical Coll. and Hosp. of Philadelphia		(1921)	86.1
Jefferson Medical College (1921) 76.1, 84, 84.7, 87.1, 90		(1920)	80.1,
University of Pennsylvania		(1920)	84.1
Woman's Medical College of Pennsylvania		(1921)	83.6

FAILED

Bowdoin Medical College		(1921)	64.2
St. Louis College of Physicians and Surgeons		(1918)	39.1
Mcharry Medical College (1917) 62.8, (1921) 70.3, 71.6, 73.1, 73.6			

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University		(1920)	Georgia
Hahnemann Medical College and Hosp. of Chicago		(1887)	Iowa
University of Kansas School of Medicine		(1920)	Kansas
University of Louisville Medical Department		(1915)	Virginia
Tulane University		(1908)	Oklahoma
Johns Hopkins University		(1912)	Maryland
University of Michigan Medical School		(1906)	Michigan
University of Minnesota Medical School		(1920)	Minnesota
St. Louis University School of Medicine		(1912)	Arkansas
John A. Creighton Medical College		(1896), (1910)	Nebraska
University of Nebraska		(1920)	Nebraska
Mcharry Medical College		(1906)	Georgia
National University, Athens		(1905)*	Minnesota

* Graduation not verified.

Mississippi June Examination

Dr. W. S. Leathers, secretary, Mississippi State Board of Health, reports the written examination held at Jackson, June 21-22, 1921. The examination covered 12 subjects and included 96 questions. An average of 75 per cent. was required to pass. Of the 17 candidates examined, 15 passed and 2 failed. Nineteen candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Northwestern University		(1921)*	84
Tulane University		(1921) 77, 82, 83, 84, 85, 86,	86, 88
University of Pennsylvania		(1921)	89, 93
Mcharry Medical College		(1912) 76, (1921)	83
University of Tennessee		(1921)	92, 93

FAILED

Louisville National Medical College		(1911)†	
Tulane University		(1921)	72

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University		(1919)	Dist. Colum.
Hahnemann Medical College and Hospital of Chicago		(1908)	Illinois
University of Louisville		(1910)	Tennessee
Tulane University (1919) Louisiana, (1920) Alabama, Louisiana		(1903) Louisiana, (1914)	California
Cornell University		(1905)	Louisiana
Jefferson Medical College		(1919)	Penna.
Mcharry Medical College (1916) Missouri, (1918, 2) Tennessee		(1913)	Arkansas
University of Tennessee (1915) Tennessee, (1917) Arkansas		(1894)	Alabama
Vanderbilt University		(1914) Tennessee, (1920	Alabama

* This candidate has finished the medical course and will obtain the M.D. degree after he has completed a year's internship in a hospital.
† No grade given.

New Mexico January Examination

Dr. R. E. McBride, secretary, New Mexico State Board of Medical Examiners, reports that 1 candidate was licensed on diploma and 10 candidates were licensed by reciprocity at the meeting held at Santa Fe, Jan. 10-11, 1921. The following colleges were represented:

College	LICENSED ON DIPLOMA	Year Grad.	Number Licensed
University of Louisville Medical Department		(1915)	1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Chicago		(1910)	N. Carolina
University of Illinois		(1916)	Illinois
College of Physicians and Surgeons, Baltimore		(1904)	Maryland
University of Michigan Medical School		(1919)	Michigan
University of Nebraska		(1902)	Iowa
Columbia University		(1914)	Alabama
Chattanooga Medical College		(1903)	Alabama
University of Texas		(1919)	Texas
University of Toronto		(1920, 2)	Canada

Book Notices

THE ASSESSMENT OF PHYSICAL FITNESS BY CORRELATION OF VITAL CAPACITY AND CERTAIN MEASUREMENTS OF THE BODY. By Georges Dreyer, C.B.E., M.A., M.D., Professor of Pathology in the University of Oxford. In Collaboration with George Fulford Hanson, with a foreword by Charles H. Mayo, M.D. Cloth. Price, $3.50. Pp. 127, with illustrations. New York: Paul B. Hoeber, 1921.

This book aims "to supply medical men and others directly interested in the subject with a method, new only in the details of its application, whereby physical fitness can be assessed on the basis of a few simple physical measurements." The four measurements employed are: (1) body weight; (2) length of trunk; (3) circumference of chest, and (4) vital capacity, that is, the maximum volume of air exhaled in a single expiration following a maximum inspiration. On the basis of these four measurements on what may be called normal men and women the senior author has constructed a number of mathematical formulas by means of which body weight, vital capacity and chest circumference can be calculated from the length of the trunk. The greater part of the book (four fifths) is taken up by tables calculated from these formulas. These tables are ready measures, as it were, so that without calculation, but simply making the four measurements, it may be quickly determined whether the vital capacity of any individual is normal or below normal. The authors conclude that "if a person has a vital capacity 10 per cent. less than that of normal for his class, it is probable that he is suffering from some health depressing condition; if he is 15 per cent. below the normal limit it is practically certain that he is abnormal in this respect." People are divided on the basis of vocation into three classes as regards the relation of vital capacity to the three anatomic measurements. This classification seems highly arbitrary and of little practical value. The book is of interest to men and women concerned with physical education and race improvement. But the methods and deductions propounded by the authors must be taken tentatively or on trial. Hundreds of thousands of measurements of the kind outlined in the book may bring out facts of importance for prognosis or corrective therapy. But it must not be forgotten that none of these measurements reveal the quality of the individual protoplasm any more than the cubic space of a man's cranium reveals his brain power. Moreover, a smaller vital capacity can be compensated for by more rapid breathing. The book is suggestive but not conclusive.

THE PROSPECTIVE MOTHER. A Handbook for Women During Pregnancy. By J. Morris Slemons, Associate Professor of Obstetrics, the Johns Hopkins University. Second edition. Cloth. Price, $2. Pp. 343. New York: D. Appleton and Company, 1921.

Systematic blood pressure determinations for safeguarding the health of the prospective mother have become firmly established during the past decade in the practice of obstetrics. Advances in the study of the endocrines have shown a better knowledge of their influence in the course of pregnancy. These and other factors, such as improved methods of infant feeding, have made wise a revision of this volume, already a standard exposition for the laity of the principles of midwifery. Furthermore, the author finds it well to draw lay attention to the fact that certain innovations of promise, such as the Abderhalden test and scopolamin-morphin analgesia, have not stood the test of a fair trial. In its arrangement the subject matter follows faithfully the outline of the first edition. The signs of pregnancy, the development of the ovum, the embryo, the food requirements during pregnancy, and general hygienic measures comprise the themes taken up in the early chapters. The complications of pregnancy, miscarriage, preparation for confinement, labor, and the lying-in period are next considered, all with painstaking explanatory detail well phrased for the woman not trained in medical terminology. The final chapter on nursing is exceptionally well written and, in some respects, the most important one of all. The author succeeds admirably in suppressing his personal views, thus avoiding didacticism. Hence the volume is one which the specialist as well as the general practitioner will find suitable to recommend to the client; yet hints at personal preference are occasionally seen. It is interesting to note, for instance, that while ether and nitrous oxid gas are mentioned favorably as anesthetics, yet chloroform seems to be preferred and is included in the list of articles in preparation for labor. Advice to the patient who sleeps poorly during the terminal months of pregnancy is excellent and withal sympathetically expressed; likewise that concerning traveling, though that pertaining to travel by motor car might better have been given with some detail. Surely the character of the road and speed of travel are quite as important as the length of the journey. A somewhat too brief glossary and an adequate index are provided.

THE ORIGIN AND DEVELOPMENT OF THE NERVOUS SYSTEM FROM A PHYSIOLOGICAL VIEWPOINT. By Charles Manning Child, Professor of Zoology, University of Chicago. Cloth. Price, $1.75 net. Pp. 296, with 70 illustrations. Chicago: University of Chicago Press, 1921.

This book, the eleventh in the University of Chicago Science Series, endeavors to apply the facts and principles of "axial gradients" to explain the evolution of the nervous system. The first five chapters are devoted to an outline or exposition of the facts of "gradients" and "gradient patterns" as now known, especially in the lower invertebrates. Science is indebted to Professor Child and his pupils for the development of this important field of biology. Hence, in these chapters the author deals mainly with experimental and, to him, familiar facts. The application of the gradient principle ("gradient and excitation patterns") as the cause or process of evolution of the nervous system is a more difficult performance, as in this field the author has virtually no direct experimental data to guide him. Man was not present when the initial differentiation took place and was fixed in the hereditary mechanism; nor have as yet any experiments been successfully carried out showing how differentiation of the nervous tissues may be brought about in the absence of hereditary impulses. The development of the main thesis of the book is therefore highly speculative and theoretical. But the points of view advanced are nevertheless interesting and worth careful study on the part of all medical men interested in the fundamental problems of living matter. Reduced to its simplest terms, Professor Child attempts to show that the differentiation and evolution of the nervous system is a continuous process due to reaction of primitive protoplasm to external stimuli. As the animal world appears today, the differentiation and development of the nervous system is to a large extent fixed by the hereditary mechanisms. Professor Child's thesis would thus seem to demand the inheritance of individually acquired characters, a view rejected by many competent biologists of our times. Biology and medicine would be greatly benefited if the brilliant author of this book would apply the test of experiment to the interesting speculations advanced.

TRATADO DE GINECOLOGÍA. Por el Dr. S. Recasens. Paper. Pp. 898, with illustrations. Madrid: Nicolás Moya, 1918.

This book, by the professor of gynecology and dean of the Medical School of Madrid, begins with an unusual historical introduction. Though succinct, the introduction is rather complete, especially as regards Spanish achievements. In this review we note that the first vaginal hysterectomy was made for cancer by a Spaniard, Andrés Cruce of Granada, in 1500. The most surprising part of it was that the patient recovered, although no forceps or ligature was applied and only 1½ pounds of blood was lost. In the first part, comprising twenty-five chapters, Recasens takes up successively the topography and development of the feminine genitalia, examination, etiology, symptomatology, treatment, both surgical and medical, and postoperative complications. Palpation (tactus eruditus) in his opinion is the best means of gynecologic examination, furnishing, as he says, a definite diagnosis while the other methods are merely confirmatory. In the chapter on examination he states that Europeans have little use for Sims' position, which Americans use so much, as it is considered inferior to the lithotomy position and the dorsal recumbent position. In the chapter on etiology, he classes women's genito-urinary diseases under five headings: inflammation, new growths, traumatisms, abnormalities of position and direction, and malformations. In the second part, comprising thirty-one chapters, he considers separately the different diseases that affect feminine organs. The discussion is thorough, and is illustrated by references to personal cases of the author. One of the most valuable sections

is that devoted to treatment, as Recasens discusses authoritatively the results with various methods, basing his remarks on his own experience as well as that of others. He lays special stress on the present tendency to nonsurgical therapeutics, which he explains as due in part to the reaction against the abuse of surgery in recent times. He presents, however, with utmost detail the different surgical technics, specifying those cases in which operatory methods have no substitutes. He is firmly convinced as to the value of the roentgen rays, which he considers essential in the treatment of surgical carcinoma. In considering in detail the social aspect of venereal diseases, he finally comes to the conclusion that education is the only solution of the problem, as laws will inevitably fail unless supported by public opinion. The book is profusely and beautifully illustrated, many of the illustrations being from personal cases and several in colors. The style is clear, unpretentious and sometimes even entertaining. Altogether, the book, both in presentation and contents, must rank with the best works in its class in any language.

Organic Medicinal Chemicals (Synthetic and Natural). By M. Barrowcliff, M.B.E., F.I.C., and Francis H. Carr, C.B.E., F.I.C. Cloth. Price, $4. Pp. 331, with 24 illustrations. New York: D. Van Nostrand Company, 1920.

The book is divided into numbered sections, each of which is devoted to a topic, such as "narcotics and general anesthetics," "naturally occurring alkaloids and their derivatives," "antipyretics and analgesics," and "organic antiseptics and disinfectants." One section is entitled "Diuretics and Uric Acid Solvents," notwithstanding that critical medical thought denies the existence of "uric acid solvents" as practical therapeutic agents. The book chiefly describes methods for manufacturing organic medicinal chemicals which are taken almost entirely from German and English patents, American and French patents being generally ignored. The authors recognize the incompleteness of some of the descriptions, this being due in most cases to insufficiency of published accounts. The physical properties, tests for identity and purity and therapeutic application of the drugs are briefly mentioned, these being much less complete than are usually found in the various pharmacopeias, pharmacopeial commentaries, dispensatories and in New and Nonofficial Remedies. Many medicinal substances which are now manufactured under free names are described under the formerly protected names of German origin, the modern scientific and accredited names being conspicuous by their absence. Examples are salvarsan instead of arsphenamin; veronal instead of barbital; anesthesin rather than benzocain; atophan and novatophan instead of cinchophen and neocinchophen, and novocain in place of procain. The very considerable American literature on the chemistry of medicines is almost entirely overlooked, there being no reference (so far as noted) to American patents, the investigations of medicines by the Council on Pharmacy and Chemistry of the American Medical Association, to the Chemical Foundation, or to other American agencies interested in the development of medicinal chemical industry. It is not to be expected that a book which almost completely ignores the work of American chemists will be welcomed by them. It is of little value to physicians, but would find use in the manufacturing laboratory.

Chirurgie de guerre et d'après-guerre. Par Auguste Broca, Professeur a la Faculté de médecine de Paris. Paper. Price, 25 francs net. Pp. 479, with 545 illustrations. Paris: Masson et Cie, 1921.

This book is based on the author's experience as head of the hospital of the Institute of France during the war and the reconstruction period. His observations are of especial value because he was able to care for his patients from soon after the receipt of the injury until healing was complete, which in many cases extended over a period of years. He discusses the entire field of war surgery and considers it under the headings of primary, secondary, and late or tertiary surgery. No new principles were evolved for the special treatment of war wounds, and he is particularly opposed to the use of antiseptics, on the grounds that they diminish phagocytosis and destroy newly forming tissue. The chapters dealing with the treatment of war fractures are especially good and will be of practical service to those desiring information on the management of compound fractures in civil surgery.

Miscellany

PEYOTE, THE NARCOTIC MESCAL BUTTON OF THE INDIANS

W. E. SAFFORD, Ph.D.
Economic Botanist, Bureau of Plant Industry, United States Department of Agriculture
Washington, D. C.

Peyote is a small, fleshy, spineless cactus which has been used for centuries by aboriginal Americans in connection with their religious rituals and as a magic plant believed to have the power of inducing supernatural visions. By most laymen the name cactus is loosely applied to almost any spiny plant of the arid regions of our Southwest. Indeed, the Greek κάκτος, from which Linnaeus adopted the name cactus, was the spiny wild artichoke, or cardoon (*Cynara cardunculus*) not at all related to the botanical family Cactaceae, which is essentially American and had no representatives in the Old World until after the discovery of America. Plants are classified by the structure of their flowers and fruit, not by their general appearance or their habit of growth; the peyote, though quite devoid of spines, is a true cactus. It was first referred to the genus Echinocactus, afterward to Anhalonium, and finally was made the type of a new genus, Lophophora. The various generic names are probably the cause of the erroneous idea that a number of species of narcotic cacti are used by the Indians. As a matter of fact there is but one species, *Lophophora williamsii*, so used. This species varies in the arrangement of its tubercles. One form of it was called *Anhalonium lewinii* by Hennings in 1888; but the latter was shown by Professor Coulter to be only a variety of *Lophophora williamsii*, a species first described under the name *Echinocactus williamsii* in 1845 by Lemaire, the distinguished authority on Cactaceae.

Dr. Thomas S. Blair,[1] chief of the Bureau of Drug Control, Pennsylvania Department of Health, recently published a paper in The Journal in which he states that he has not succeeded in finding a botanic description of the narcotic peyote plant in any of our American works on botany. For a description of this plant, of both the typical form *Lophophora williamsii* and its variety *lewinii*, I would refer the reader to a paper by John M. Coulter.[2] In this paper Dr. Coulter states that he found the form with irregularly arranged tubercles, named in honor of the chemist Dr. Lewin of Berlin, to be connected with the typical *Lophophora williamsii* by such complete intergradation that it was impossible to separate the two forms as distinct species. This intergradation was shown by a great number of living specimens in the Missouri Botanical Garden. Dr. Coulter's observations have since been confirmed by Dr. J. N. Rose of the Carnegie Foundation. I shall not here quote the botanic descriptions of the type and its variety. The intergradation between the typical forms *Lophophora williamsii* and the variety *lewinii* may be seen at a glance. The flowers of these two forms are indistinguishable.

The earliest description we have of the peyote plant is that of Hernandez, a learned Spanish physician sent in the sixteenth century by his sovereign, Philip II, to make a study of the resources of New Spain. He characterizes it as a root "of nearly medium size sending forth no branches or leaves above ground, but with a certain woolliness adhering to it"; and he adds: "Marvelous virtues are attributed to it by the Indians (if any faith can be given to what is commonly said among them on this point). It enables those eating it to

1. Blair, T. S.: Habit Indulgence in Certain Cactaceous Plants Among the Indians, J. A. M. A. 76: 1033 (April 9) 1921.
2. Coulter, J. M.: Preliminary Revision of the North American Species of Cactus, Anhalonium, and Lophophora, Contributions from the United States National Herbarium 3: 91-132 (June 10) 1894.

foresee and prophesy such things, for instance, as whether on the following day the enemy will make an attack upon them, or whether the weather will continue favorable; or to discern who has stolen from them missing objects, and other things of like nature which the Chichimecas really believe they have the power of divining. On this account the plant scarcely issues above the surface of the ground, but hides itself as though unwilling to harm those who may discover and eat of it."[3]

Peyote grew, and still grows, in northern Mexico in what is now the state of Zacatecas, and also in Chihuahua and on both sides of the Rio Grande not far from Laredo, Texas. Its collection was formerly accompanied by ceremonies recalling those observed by early herbalists of the Old World in collecting certain medicinal plants. It was dried and preserved either in longitudinal strips called *raiz diabolica* (devil's root) or in disks resembling mushrooms called *teonanacatl* (god's flesh, or sacred mushrooms). Padre Sahagun,[4] writing in 1575, states that it was commonly eaten by the wild Indians of the north called Chichimecas, giving them courage to fight and rendering them insensible to the pangs of hunger and thirst, as well as protecting them, as they believed, from all danger. Padre José Ortega, writing before 1700, described the ceremonial of the peyote, accompained by singing and dancing throughout the entire night and resulting in the intoxication of those who partook of the drug.

The early Catholic missionaries were opposed to peyote, not so much on account of its physical effects on the Indians as because it was connected with the rituals of their religion, and kept them from embracing Christianity. It was forbidden by law, and to partake of it was regarded almost as great a crime as cannibalism. In one of the early manuals for the administration of the sacraments to the Indians, the following questions were asked: "Hast thou eaten flesh of man? Hast thou eaten peyote?"

NARCOTICS AND INTOXICANTS USED BY INDIANS

In my investigation of the narcotics and intoxicants used by the American Indians, I have found that alcoholic drinks have been their greatest curse. The principal sources of these have been the Mexican maguey, or century plant, and the sotol of the southwestern United States and northern Mexico. In addition to these intoxicants, certain drinks called tizwin (from the Aztec *tchuino*, intoxicating) were formerly brewed in the Southwest from malted maize or other grain, and in South America fermented drinks were prepared from maize and the roots of mandioca. The effects of all these drinks were sometimes strengthened by the addition of narcotics. The use of the dried disks of peyote for strengthening the distilled liquor called *mescal* has given to them the name "mescal buttons," and has led the erroneous belief that these disks are obtained from the mescal plant, or perhaps that the mescal plant is a species of cactus. In inquiries relating both to maguey and to sotol, the plants so called are frequently characterized as "cactuses." As a matter of fact, the magueys are species of Agave, belonging to the botanic family Amaryllidaceae, and the sotols are species of Dasylirion, belonging to the Liliaceae. From both sources a sweet sap is obtained (the *nequatl*, or "honey-water," of the Aztecs), as harmless as sweet cider when fresh, but intoxicating like hard cider when fermented. This fermented sap, variously doctored with spices or perhaps with narcotics, is the well-known pulque of Mexico. The sap, in addition to sugar, contains albuminous substances, which after fermentation become ill smelling. These substances may be precipitated by the introduction of certain roots or barks containing tannin, after which the clarified liquor is decanted. The action of the tannic acid on the proteins in the pulque may be compared to that of hops in the manufacture of beer. In addition to precipitating the albuminous material, the barks or roots used for the purpose impart a pleasant aromatic flavor to the drink.[5]

The first to study the chemical properties of peyote was Dr. L. Lewin, who in 1888 used in his investigations dried plants furnished by Parke, Davis & Co. of Detroit. A chemical analysis was also made by Erwin E. Ewell,[6] who announced his results in a paper entitled "The Chemistry of the Cactaceae."

EFFECTS OF PEYOTE

Various accounts of the effects of peyote have been published. In some of these the drug is said to produce beautiful color visions; in others, no such sensation is recorded. From the testimony of Indians, the effects seem to be of a hypnotic character. Peyote has been called a habit-forming drug, and some writers have likened it to hashish, or Indian hemp. The latter, which has been introduced into Mexico and our Southwest under the name *marihuana*, is a most dangerous drug. Introduced cladestinely into prisons, it has been the cause of riots. Its use is now forbidden by the Mexican government. Peyote is never used habitually by the Indians, but is now used, as it was used four centuries ago in old Mexico, in certain ceremonials. It causes hallucinations, but its effect is quieting, and there is no tendency to commit acts of violence by those who partake of it. More than this, testimony was given by many of those who use it ceremonially in the so-called Peyote Church, that since joining the latter they have not only discontinued the use of all alcoholic stimulants but that they do not even crave them. The greatest harm caused by peyote is its use as a medicinal remedy by the Indians, who regard it as a sacred plant possessing magic curative properties. By the unwise administration of it to little children and to invalids it has in all probability been harmful and even fatal.

Its physiologic and therapeutic properties were investigated by Drs. D. W. Prentiss and Francis P. Morgan[7] of the department of materia medica and therapeutics in the Columbian University. Illustrations of the mushroom-like mezcal buttons and of blooming specimens of both the typical form of *Lophophora williamsii*, with its tubercles in regularly radiating rows, and its variety *lewinii*, with the tubercles alternating or arranged diagonally, are included in an article[8] of mine published in 1915.

3. Hernandez: De Historia Plantarum Novae Hispaniae, Francisco Hernando Medico atque Historico Philippi II. Hispaniae et Indiarum Regis; et totius Novi Orbis Medico Primario, Auctore, Madrid **3**: 70, 1790.

4. Sahagun, Bernardino: Historia general de las cosas de Nueva España, Edicion Bustamente **3**: 70.

5. Safford, W. E.: The Use of Timbe Barks by the Mexicans in the Preparation of Alcoholic Drinks, Science **29**: 160, 1909.

6. Ewell, E. E.: The Chemistry of the Cactaceae, J. Am. Chem. Soc. **18**: 624-643, 1896.

7. The results of their experiments were published in Volumes 19 and 20 of the Therapeutic Gazette, 1895 and 1896.

8. Safford, W. E.: An Aztec Narcotic, J. Heredity **6**, July, 1915.

Medicolegal

Revocation of License for Unprofessional Conduct or Deceiving Patient Into Submission to Treatment by One Not a Physician

(Dilliard v. State Board of Medical Examiners (Colo.), 196 Pac. R. 866)

The Supreme Court of Colorado, in affirming a judgment that affirmed one of the board revoking respondent Dilliard's license to practice medicine, says that the respondent was charged with being guilty of unprofessional and dishonorable conduct in that he held out to a Mrs. Barber that one West was a trained and skilled physician and surgeon and licensed to practice medicine and surgery, and caused her to submit to treatment by the said West, whereas West was not a physician and not licensed to practice. The act under

which the proceeding was taken provides for revocation for various reasons, among others for "immoral, unprofessional or dishonorable conduct." The district court had no power to review the action of the board except for excess of jurisdiction or abuse of discretion. That the board had jurisdiction of the subject-matter of the case and of the person of the respondent could not be questioned.

It was urged that the legislature had no power to provide for the revocation of a license for conduct that was unprofessional or dishonorable unless it was also immoral, and that in charging and convicting the respondent with unprofessional and dishonorable conduct only, the board was exercising rights which the law could not give it, and hence was acting without or in excess of jurisdiction. The supreme court does not think that position was tenable. To say that the legislature cannot constitutionally provide for the revocation of a physician's license for unprofessional or dishonorable conduct involves the premise that he has a constitutional right to practice unprofessionally and dishonorably. It is essential that a licensed physician be possessed of professional honor. Counsel's most earnest argument, however, was that the expression "unprofessional" was too indefinite and uncertain, that it should have been defined by statute, that its definition could not be delegated to a commission, and so, since the clause "immoral, unprofessional or dishonorable" was in the disjunctive, it was void; with which the supreme court does not agree. The court holds that the words "immoral, unprofessional or dishonorable" are sufficiently definite, and that the board has jurisdiction to determine what constitutes unprofessional and dishonorable conduct, and to revoke a license on account of such conduct. However, although the board has power to decide in the first instance what constitutes unprofessional conduct, if it abuses that power the courts may review its decision and reverse it.

Did the board abuse its discretion? The supreme court does not think so. The evidence tended to show that the respondent did what he was accused of, and the supreme court cannot consider whether it was sufficient. The court can, however, determine whether to hold such conduct to be unprofessional and dishonorable is an abuse of discretion. It is evident that it is not. Can there be any doubt that it is an offense against which the public should be protected, and not a mere breach of professional ethics, to deceive a patient into submission to treatment by one not a physician by representing him to be such?

It must follow from what has been said of the power of the court to consider abuse of discretion, that it must in some cases consider the evidence in order to determine whether the facts shown come within the proper definition of that term as used in the statute, and consequently the board, when requested by the respondent, ought to permit and facilitate the taking of the testimony in shorthand and its incorporation into the record.

A motion made by the board for a modification of the opinion by the elimination of that portion which suggested review of evidence for abuse of discretion, on the ground that the opinion in that respect was contrary to the well-established law on that subject, was denied by the supreme court, as was also a motion for a rehearing.

Damages Allowed Physician for Personal Injuries

(Baldwin v. City of Norwalk (Conn.), 112 Atl. R. 660)

The Supreme Court of Errors of Connecticut finds no error in a verdict for $16,000 damages in favor of the plaintiff, a physician, for injuries which he sustained as the result of the overturning of his automobile, in February, 1918, owing to an obstruction alleged to have been negligently left in the street. It was contended by the defendant that the verdict was excessive, but the court says that at the time of the accident the plaintiff, although 63 years of age, was a man of unusual vigor and activity. He was married and required the net income of $2,000, which sum he was then earning, for the reasonable support of his family. As a result of his injuries, he suffered a severe scalp wound and many bruises and contusions on his body, and also a fracture of the pelvis in the region of the acetabulum. As a result of that fracture, his left leg was shortened at the hip, and he suffered from loss of motion in the leg so that he was unable to move about without the aid of a cane and crutch, and was unable to drive an automobile. By reason of his profession of medicine he had, prior to his injury, received a net income of about $2,000 a year. As a result of his injuries, he was unable to practice his profession until about the month of May following, when he was able to attend to a few office calls, and since then, because of his inability to get about, his practice has been limited to office calls, and his income from his practice has not exceeded $500 in any twelve months. His injuries and disabilities are permanent, and his ability to pursue the practice of medicine and to keep and maintain the patronage of his patients has been greatly and permanently impaired, and there is no other labor or calling in which he will be able to earn a livelihood. Moreover, the injuries suffered by him were exceedingly painful, and both the injuries and the treatment for them caused him to suffer great mental and bodily pain and anguish. His expectation of life at 63 years of age was about 12.81 years. The sum of $13,000 at 6 per cent. would procure for him an annuity of about $1,500 for twelve and a half years. Taking into consideration compensation for pain and suffering and discomfort during his life, the court does not find that the verdict was so excessive as to indicate that the jury was controlled by passion, prejudice, partiality or corruption.

Isolation Not Warranted by Suspicion of Disease

(Ex parte Shepard (Calif.), 195 Pac. R. 1077)

The District Court of Appeal of California, Second District, Division 2, in ordering Mrs. Shepard discharged from the custody of the superintendent of a hospital who was the respondent to an application for a writ of habeas corpus, says that the respondent by his return to the writ alleged that the woman was isolated in the hospital "suspected of being infected with a contagious, infectious and communicable disease, namely, syphilis and gonococcus infection"; that, in his opinion, it was necessary to isolate her until an examination was made to determine whether she was afflicted with the diseases or either of them; that there was reasonable cause to believe that she was so infected, and that she refused to submit herself to the desired examination. If the respondent had any power to deprive the woman of her liberty, that power was to be predicated on the provisions of Section 2979a of the Political Code of California, which makes it the duty of health officers and others to take necessary measures to protect the public against the spread of certain diseases from persons whom such officers know or have reason to believe are afflicted with such diseases. But, paying just regard to the constitutional guaranties of the right to personal liberty and security, it must be asserted that more than a mere suspicion that an individual is afflicted with an isolable disease is necessary to give an officer "reason to believe" that such person is so afflicted. There was nothing in the record to show that the respondent knew this woman to be diseased, and the court cannot see that he had sufficient reason to believe that she was diseased, although she had been charged with keeping a house of prostitution and having agreed to indulge in sexual intercourse for a consideration.

Society Proceedings

COMING MEETINGS

Amer. Acad. of Ophthal. and Otolaryngology, Philadelphia, Oct. 17-22.
American Association of Railway Surgeons, Chicago, Oct. 18-20.
American Child Hygiene Association, New Haven, Conn., Nov. 2-5.
American College of Surgeons, Philadelphia, Oct. 24-28.
American Public Health Association, New York, Nov. 14-18.
American Society of Tropical Medicine, Hot Springs, Ark., Nov. 14-15.
Hawaii, Medical Society of, Honolulu, Nov. 21.
Medical Association of the Southwest, Kansas City, Mo., Oct. 25-28.
Mid-Western Association of Anesthetists, Kansas City, Mo., Oct. 24-28.
Missouri Valley, Medical Society of the, Kansas City, Mo., Oct. 25-28.
Radiological Society of North America, Chicago, Dec. 7-9.
Southern Gastro-Enterological Association, Hot Springs, Ark., Nov. 14-17.
Southern Medical Association, Hot Springs, Ark., Nov. 14-17.
Tri-State District Medical Society, Milwaukee, Wis., Nov. 14-17.
Virginia, Medical Society of, Lynchburg, Oct. 18-21.
Western Surgical Association, St. Louis, Dec. 9-10.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Dermatology and Syphilology, Chicago

October, 1921, 4, No. 4

Pseudoxanthoma Elasticum. B. Throne, Brooklyn, and H. Goodman, New York.—p. 419.
Staining of Spirochaeta Pallida by Fontana-Tribondeau Method. C. Fuentes, Havana, Cuba.—p. 448.
Comparison of Ingredients of Ringworm Culture Mediums. F. D. Weidman and T. M. McMillan, Philadelphia.—p. 451.
Porokeratosis; Report of a Case. C. S. Wright, Ann Arbor, Mich.—p. 469.
*XXIV. Immunity Studies in Experimental Syphilis. II. Spirocheticidal Properties of Serums in Latent and Experimental Syphilis with Some Observations on Immunity. F. Eberson, St. Louis.—p. 490.
*Refractometric Studies in Human Syphilis with Special Reference to Changes During Treatment with Arsphenamin, and Neo-Arsphenamin. K. Tokuda, Philadelphia.—p. 512.
Streptococcic Dermatoses. E. D Chipman, San Francisco.—p. 526.

Spirocheticidal Properties of Blood Serum in Latent Syphilis.—The blood serum from persons having latent syphilis Eberson found has spirocheticidal properties. Rabbits were protected uniformly against infection with virulent *Spirochaeta pallida* in combination with such serums. Protective properties were found in the serums of asymptomatic persons with latent syphilis with the following histories: infection with syphilis dating back from three to twenty-five years; patients who had received treatment until the Wassermann reaction had become negative; a number of patients who had no history of infection, who had taken no treatment, and who had a slight positive Wassermann reaction usually in the cholesterin antigen; a group of patients in whom the Wassermann reaction was slightly positive in the cholesterin and noncholesterin antigens, or strongly positive in either one, in inverse relationship; an infant whose mother's serum was found to contain spirocheticidal properties. Spirocheticidal activity of serums in latent syphilis is of such a character as to prevent the normal dissemination of *Spirochaeta pallida* from a primary focus. Failure to inoculate rabbits with mixtures of serums and spirochetes was correlated with negative inoculations with the blood from such animals. In the experimental animal, spirochetolytic serum may be developed in the course of from six months to one year after the infection. In the rabbit, as in man, protective substances are found at a time when the infection has attained a relatively latent state. The presence of these substances in given serums apparently depends on the stage of infection.

Refractometry in Syphilis.—Refractometric studies were made by Tokuda in thirty-two cases of untreated syphilis and the following observations were made: There is a marked increase in the refractive index of the serum and also in the globulins in syphilis, especially in active secondary cases. The refractive index of the serum is highest in secondary cases, lowest in the congenital and is intermediate between these two in the tertiary cases. The figures for total proteins, albumins, globulins and the relative amount of globulin are somewhat higher in secondary than in tertiary syphilis, the figures for congenital syphilis being somewhat lower than those of the latter. Considered in relation to the Wassermann reaction of the serums, before treatment, the strongly positive cases show values of total proteins, albumins, globulins and relative amount of globulins higher than the weakly positive cases. During a course of eight intravenous injections of arsphenamin from 0.4 to 0.6 gm. and neo-arsphenamin 0.9 gm., each drug being given at weekly and semiweekly intervals, the refractometric studies (made before each injection) show these results: Classified according to the Wassermann reaction of the serums before treatment, there are no sufficiently constant or striking differences to warrant differentiating between the strongly and weakly positive series. Considered according to the intervals of injection, the relative amounts of globulins show more rapid decline during weekly arsphenamin injections. During semiweekly periods of administration the changes are about the same. Classified according to the degree of resistance of the patients to antisyphilitic treatment (as indicated by repeated Wassermann tests) it was observed that: when the Wassermann reaction remained persistently positive, the refractive index, the percentage of total proteins and the relative amount of globulins of the serum showed little or no tendency to drop below their original values. When the Wassermann reaction, on the other hand, became very readily negative, the curves fell, with more or less regularity during the course of injections.

Archives of Neurology and Psychiatry, Chicago

October, 1921, 6, No. 4

*Calcification of Cerebral Vessels with a Clinical Picture Simulating Brain Tumor. P. Bassoe and G. B. Hassin, Chicago.—p. 359.
Intraneural Plexus of Fasciculi and Fibers in Sciatic Nerve. J. C. McKinley, Minneapolis.—p. 377.
*Heminhypertrophy and Mental Defect. A. Gesell, New Haven, Conn.—p. 400.
Eye Signs in Intracranial Tumors of Anterior Fossa. A. B. Siewers, Syracuse.—p. 424.
*Results in Two Hundred and Fifty-One Cases Five Years After Admission to a Hospital for Mental Diseases. E. D. Bond, Philadelphia.—p. 429.

Calcification of Cerebral Vessels.— Bassoe and Hassin report a case which is interesting in three respects: First, a diagnosis of brain tumor was clinically justifiable and several operations were performed in the hope of removing the supposed tumor. It was an example of so-called pseudotumor cerebri. Second, epileptiform attacks of petit mal and grand mal types were the principal symptoms, so the case shows what kind of changes occasionally may cause such attacks. Third, and chiefly, the case is of interest on account of the most unusual pathologic condition presented; namely, a large indurated area in the interior of the left hemisphere in which the capillaries were infiltrated with a hyalin, or colloid material and also calcified to such an extent that decalcification was necessary for the preparation of suitable microscopic specimens.

Hemihypertrophy.—Gesell records a case of total unilateral hypertrophy and reviews forty cases hitherto recorded in the literature. In a discussion of the etiologic theories for hemihypertrophy, preference is given to the view that hemihypertrophy is not a hereditary character but a morphogenetic anomaly dating back to an early embryonic stage. Hemihypertrophy is interpreted as a form of asymmetry due to a possible deviation in the normal process of twinning. The complication of mental defect is attributed to an abnormality in the process of bilateral twinning which involves a disturbance of normal tissue development. Possible relations of certain cases of mental defect to cranial asymmetry and intra-uterine meningitis are suggested.

Results of Treatment in Mental Cases.—Of the 251 patients studied by Bond sixty-eight have gone back to the community fully recovered, sixty-one have gone back to the community on a self-supporting basis, eight have shown marked improvement, in fifty-one the illness has progressed to death, and in sixty-three there has been essentially no improvement. The dementia praecox patients stay; the only deaths occurred in three who were taken home. The senile arteriosclerotic patients die. The manic-depressive death rate is not inconsiderable; deaths during excitement were always partly due to another disease. The unclassified, a group kept large in order to keep other groups pure, had an even distribution of results; most of them were unproductive, resistive patients with no signs of organic brain disease.

Archives of Ophthalmology, New Rochelle

September, 1921, 50, No. 5

Ophthalmologic Findings in Traumatic Asphyxia with Report of Case. P. D. Berrisford, St. Paul.—p. 411.
Brief Notes on Some Ophthalmologic Conditions. H. Smith.—p. 422.
Report of Second Hundred Successive Extractions of Cataract in Capsule After Preliminary Subluxation with Capsule Forceps. A. Knapp, New York.—p. 426.
Melanosarcoma of Choroid Occurring in Brothers. A. O. Pfingst and S. Graves, Louisville, Ky.—p. 431.
Practical Points in Cataract Extraction Emphasized in Col. Henry Smith's Technic for Intracapsular Extraction. C. King, Cincinnati.—p. 440.
Treatment After Cataract Operations. J. W. Millette, Dayton, Ohio.—p. 446.
Glioma Retinae Treated by Roentgen Rays with Apparent Destruction of Tumor and Preservation of Normal Vision. F. H. Verhoeff, Boston.—p. 450.
Spontaneous Hypotonus in Juvenile Glaucoma. A. H. Riedel, New York.—p. 457.

Boston Medical and Surgical Journal

Sept. 29, 1921, **185**, No. 13

*Two Cases of Carcinoma of Kidney, One with Invasion of Inferior Vena Cava and Right Heart. W. S. Quinland, Boston.—p. 367.
Congenital Atelectasis. S. A. Cohen, Boston.—p. 374.
*Calculus in Submaxillary Gland. F. S. Hopkins, Springfield, Mass.—p. 378.
Massotherapor for Ear and Nose Treatment. J. Taylor, Worcester, Mass.—p. 381.
Lead Pencil Lesions. F. J. Cotton, Boston.—p. 386.

Carcinoma of Kidney.—Quinland cites a case of carcinoma of the kidney with metastases to the liver, heart, lungs, suprarenals, lymph nodes and mesentery; tumor thrombus of inferior vena cava and right auricle. He also describes a specimen of kidney carcinoma. The cases indicate the origin of carcinoma from renal epithelial cells. The structure of the original tumor and its metastases approach very closely the structure of adenoma of renal cell origin.

Calculus in Submaxillary Gland.—The history of Hopkins' case is typical both in symptoms and in the condemnation of teeth as the supposed cause of trouble. The calculus itself is unusual both as to its mulberry appearance and as to its chemical composition, namely, calcium oxylate. Hopkins emphasized the importance of considering the possibility of salivary calculus in cases complaining of pain in the mouth, teeth, or jaws. The characteristic symptoms are swelling of the gland and pain induced by food. The diagnosis may be confirmed by roentgen-ray examination. The treatment consists in removal of the calculus, preferably through the mouth.

Canadian Medical Association Journal, Montreal

August, 1921, **11**, No. 8

Diagnosis of Chronic Cholecystitis. J. D. McEachern, Winnipeg.—p. 516.
Generalized Neurofibromatosis. E. L. Pope, Winnipeg.—p. 519.
*Fragilitas Ossium. C. W. Burns, Winnipeg.—p. 522.
Multiple Polypi in Stomach (Gastric Polypsis). A. McPhedran, Toronto.—p. 524.
Van Slyke and Palmer Method for Determining Approximate Degree of Acidosis in Diabetes Mellitus. I. M. Rabinowitch.—p. 526.
*Bacteriology of Infectious Diarrhea. S. G. Graham, Toronto.—p. 529.
*Case of Thrombosis of Aorta and Iliac Arteries Following Pneumococcal Infection of Umbilicus. E. G. Wheeler, Toronto.—p. 532.
Asthma — Its Relation to Focal Infections. R. W. Irving, Kamloops.—p. 534.
Tumors of Urinary Bladder, Diagnosis and Treatment. E. J. Boardman.—p. 539.
Prevention of Mental Breakdown. C. A. Baragar, Brandon.—p. 542.
Latency in Syphilis. J. J. Heagerty, Ottawa.—p. 548.
Codliver Oil Without Phosphorus as Effective as Codliver Oil with Phosphorus in Rickets and Tetany. A. Brown, I. F. MacLachlan and R. Simpson, Toronto.—p. 552.
Acidosis. C. R. Gilmour, Winnipeg.—p. 558.
Repair of Bony Defects of Cranium. C. B. Shuttleworth, Toronto.—p. 562.

Fragilitas Ossium a Family Disease.—Burns cites the case of a man, aged 35, who had sustained four fractures, one of which, a fracture of the femur, remained ununited for nineteen years. He had seven brothers all alive, five of whom have a multiple fracture history, with malunion or nonunion. Of four sisters none has had any fractures. The eldest brother fractured both femurs two or three times; has also broken his right arm. He has been an invalid for 12 years, because of ununited fractures of both femurs. Another brother fractured the left femur 12 years ago. It is still ununited. A third brother has had at least five or six fractures of both legs and arms, all of which have united and are useful, except the last femur fracture five years ago, which has not firmly united (probably fibrous union). A fourth brother has had at least eight fractures of arms and legs. Both femurs are ununited. The father has had three fractures. One was an ununited fracture of the right femur. Every endeavor to induce union failed. The thigh was eventually amputated.

Bacteriology of Infectious Diarrhea.—In a series of twenty-nine cases of infectious diarrhea seen by Graham 62 per cent. were proved by cultural methods alone to be due to *B. dysenteriae*. The type prevalent in this series was the Hiss-Russell.

Bacteriology of Umbilical Infections.—Nine cases of umbilical infection are analyzed by Wheeler. The organisms recovered, by means of blood culture and cultures from the umbilicus and any metastatic areas of inflammation, have been as follows: 4 cases, *Streptococcus hemolyticus*, 1 case, *Streptococcus mucosus-capsulatus*; 1 case, pneumococcus; 3 cases, *Staphylococcus pyogenes-aureus*. In the nine cases there were five cases of peritonitis, two of septicemia with no localizations, one of multiple abscess formation involving organs and joints and one with thrombosis of the hypogastric and iliac arteries and the abdominal aorta. In addition to these nine cases of umbilical infection there have been several cases of erysipelas originating on other parts of the body, cases in which the inflammatory process reached the region of the umbilicus and was followed by a fatal peritonitis, showing the umbilicus to be an open portal of entry for infection.

Florida Medical Association Journal, St. Augustine and Jacksonville

September, 1921, **8**, No. 3

Subconjunctival Injections in Eye Injuries. W. H. Adams, Jacksonville.—p. 43.
Importance of Conserving Vital Powers in Rendering First Aid. M. Freeman, Perrine.—p. 45.
Nursing Standards. M. L. Greener, Orlando.—p. 46.

Georgia Medical Association Journal, Atlanta

September, 1921, **10**, No. 16

Plea for More Thorough Examinations Before Operations are Performed. E. C. Davis, Atlanta.—p. 653.
Review of 1,000 Cases from Department of Diagnosis of Harbin Hospital. W. H. Lewis, Rome, Ga.—p. 657.
Physicians of Georgia. W. A. Davis, Atlanta.—p. 662.
Radical Versus Conservative Operation on Uterine Appendages. M. T. Benson, Atlanta.—p. 667.
Case of Cesarean Section for Placenta Praevia. J. G. Earnest, Atlanta.—p. 670.
Pelvic Infection in Female. L. J. Johns, Tallapoosa, Ga.—p. 672.
Recent Improvements in Dietetic Treatment of Diabetes Mellitus. J. E. Paullin and H. M. Bowcock, Atlanta.—p. 676.
Vaccines in Chronic Bronchitis. G. F. Klugh, Atlanta.—p. 678.
Rôle of Tooth and Tonsil in Systemic Infections. E. S. Osborne, Savannah.—p. 680.

Iowa State Medical Society Journal, Des Moines

Sept. 15, 1921, **11**, No. 9

Special Field of Neurologic Surgery After Another Interval. H. Cushing, Boston.—p. 337.
Melanosarcoma of Choroid. W. H. Johnston, Muscatine.—p. 342.
Epilepsy a Symptom of Splanchnoptosis. C. A. L. Reed, Cincinnati.—p. 344.
Traumatic Pulsating Exophthalmos. G. A. May, Des Moines.—p. 346.
Torsion of Intra-Abdominal Membranous Folds. J. F. Studebaker, Fort Dodge.—p. 350.
Principles of Basal Metabolism Determinations. W. H. Rendleman and J. I. Marker, Davenport.—p. 352.
Lethargic Encephalitis: Report of Case. M. B. Call, Greene.—p. 355.
Diffuse Subepithelial Infiltration of Upper Air Passages. H. E. Thompson, Dubuque.—p. 356.
Late Development of Fusion Sense: Case Report. G. F. Harkness, Davenport.—p. 357.

Johns Hopkins Hospital Bulletin, Baltimore

September, 1921, **32**, No. 367

*Determination of Basal Metabolism from Carbon Dioxid Elimination. J. T. King, Jr., and R. Pearl, Baltimore.—p. 277.
*Localization of Bacteria in Upper Air Passages: Its Bearing on Infection. A. L. Bloomfield, Baltimore.—p. 290.
*Ice-Box Modification of Wassermann Test in Diagnosis and Treatment of Syphilis. A. Keidel and J. E. Moore, Baltimore.—p. 296.
*Inability of Staphylococci to Form Indol from Protein, Peptone and Tryptophane. S. Bayne-Jones and P. Zinninger, Baltimore.—p. 299.
Hemolytic Exudates and Transmissible Bacterial Autolysis. J. Bordet, Brussels, Belgium.—p. 302.
Pregnancy Following Implantation of Outer End of Only Remaining Fallopian Tube into Uterine Cornu After Resection of Cornual Pregnancy. H. N. Shaw, Los Angeles.—p. 305.

Determination of Basal Metabolism from Carbon Dioxid Elimination.—It is generally believed that carbon dioxid is eliminated in a manner less even than the absorption of oxygen. King found from the analysis of twenty-seven experiments with subjects in the chamber calorimeter that the co-efficient of correlation of carbon dioxid with calories is actually higher than that of oxygen with calories. So far, then, as this points the way, carbon dioxid furnishes a better index to the heat production (basal metabolism) than does oxygen—that is, under ideal conditions. Out of 157 observations on all types of normal subjects, except the very young, only two showed carbon dioxid figures that ran distinctly ahead of corresponding oxygen figures, and in these two the

deviation percentage was slight. King is convinced of the advantages of using carbon dioxid elimination instead of oxygen consumption as an index to basal metabolism. He describes a method and an apparatus which he uses. The method is "open." This prevents danger of possible respiratory infection, for which the "closed" methods have been criticized. By weighing the carbon dioxid output no corrections for temperature and barometric pressure needs to be made such as becomes necessary in using volumetric methods of oxygen consumption. The psychic effect on the patient is also helpful. Results of measurements of carbon dioxid obtained through the method suggested corresponded closely with those published by Benedict and associates. The practical application of the proposed method has been satisfactory in several hundred observations on all types of patients. The author says the method should not be used in diabetes because of the altered respiratory quotient in that disease.

Bacteria in Upper Air Passages.—Bloomfield asserts that aside from the normal flora, bacteria do not, as a rule grow free on the mucous surface of the upper air passages. Special conditions are necessary to account for the presence of foreign organisms—either a local infection, or a transient invasion.

Icebox Modification of Wassermann Test.—The study presented by Keidel and Moore is intended to demonstrate the results of the icebox method in cases well studied and not dependent for diagnosis on this method. It has demonstrated an important superiority in its selection of uncured treated syphilitics.

No Indol Production by Staphylococci.—In order to test the ability of staphylococci to produce indol, 115 strains of staphylococcus, isolated from pathologic lesions in man, from air, dust, human feces and putrid beef, were cultivated by Jones and Zinninger in mediums containing proteins, peptone and free tryptophane. Numerous tests for indol with several reagents, particularly with Ehrlich's paradimethylaminobenzaldehyde solution, were made with the cultures at different intervals from forty-eight hours to three weeks. In no instance was a positive test for indol obtained. Although these results present only negative evidence, they are thought to be sufficient to warrant the conclusion that indol is not a product of the metabolism of staphylococcus.

Journal of General Physiology, Baltimore

Sept. 20, 1921, 4, No. 1

Conductivity and Permeability. W. J. V. Osterhout, Cambridge, Mass.—p. 1.
Stereoptropic Reactions of Shovel-Nosed Ray, Rhinobatus Productus. S. S. Maxwell, San Francisco.—p. 11.
Stereoptropism of Dogfish (Mustelus Californicus) and Its Reversal Through Change of Intensity of the Stimulus. S. S. Maxwell, San Francisco.—p. 19.
Chemical Stimulation of Nerve Cord of Lumbricus Terrestris. A. R. Moore, New Brunswick, N. J.—p. 29.
Formation of Aster in Artificial Parthenogenesis. R. Chambers, New York.—p. 33.
Organization of Starfish Egg. R. Chambers, New York.—p. 41.
Selective Absorption of Potassium by Animal Cells. I. Conditions Controlling Absorption and Retention of Potassium. P. H. Mitchell and J. W. Wilson, Providence, R. I.—p. 45.
Comparative Hydrolysis of Gelatin by Pepsin, Trypsin, Acid and Alkali. J. H. Northrop, New York.—p. 57.
Donnan Equilibrium and Physical Properties of Proteins. IV. Viscosity. J. Loeb, New York.—p. 73.
Reciprocal Relation Between Osmotic Pressure and Viscosity of Gelatin Solutions. J. Loeb, New York.—p. 97.

Journal of Biological Chemistry, Baltimore

September, 1921, 48, No. 1

Methods for Direct Quantitative Determination of Sodium, Potassium, Calcium, and Magnesium in Urine and Stools. F. F. Tisdall and B. Kramer, Baltimore.—p. 1.
*Rapid Method for Determination of Hippuric Acid in Urine. F. B. Kingsbury and W. W. Swanson, Minneapolis.—p. 13.
*Possible Source of Error in Testing for Bence-Jones Protein. C. W. Miller and J. E. Sweet, Philadelphia.—p. 21.
Acerin. Globulin of Maple Seed (Acer Saccharinum). R. J. Anderson, Geneva.—p. 23.
Dietary Factors Influencing Calcium Assimilation. I. Comparative Influence of Green and Dried Plant Tissue, Cabbage, Orange Juice and Cod Liver Oil on Calcium Assimilation. E. B. Hart, H. Steenbock and C. A. Hoppert, Madison, Wis.—p. 33.
*Method for Determination of Sugar in Normal Urine. S. R. Benedict and E. Osterberg, New York.—p. 51.
Chemical Development of Ovaries of King Salmon During Spawning Migration. C. W. Greene, Columbia, Mo.—p. 59.
Chemical Study of Certain Pacific Coast Fishes. D. B. Dill, San Diego, Calif.—p. 73.
*Potassium Content of Normal and Some Pathologic Human Bloods. V. C. Myers and J. J. Short, New York.—p. 83.
Chemical Study of California Sardine (Sardinia Cerulea). D. B. Dill.—p. 93.
Estimation of Creatinin in Presence of Acetone and Diacetic Acid. N. F. Blau, New York.—p. 105.
Structure of Thymus Nucleic Acid and on Its Possible Bearing on Structure of Plant Nucleic Acid. P. A. Levene.—p. 119.
Creatinin and Creatin in Muscle Extracts. I. Comparison of Picric Acid and Tungstic Acid Methods of Deproteinization. F. S. Hammett, Philadelphia.—p. 127.
Id. II. Influence of Reaction of Medium on Creatinin-Creatin Balance in Incubated Extracts of Muscle Tissue of Albino Rat. F. S. Hammett, Philadelphia.—p. 133.
Studies of Thyroid Apparatus. IV. Influence of Parathyroid and Thyroid Tissue on Creatinin-Creatin Balance in Incubated Extracts of Muscle Tissue of Albino Rat. F. S. Hammett, Philadelphia.—p. 143.
Studies of Acidosis. XVII. Normal and Abnormal Variations in Acid-Base Balance of Blood. D. D. Van Slyke.—p. 153.
Preparation and Analysis of Animal Nucleic Acid. P. A. Levene.—p. 177.
Liver Lecithin. P. A. Levene and H. S. Simms.—p. 185.
On Numerical Values of Optical Rotations in Sugar Acids. P. A. Levene.—p. 197.
Preparation and Standardization of Collodion Membranes. A. H. Eggerth, New York.—p. 203.
*Direct Quantitative Determination of Sodium, Potassium, Calcium and Magnesium in Small Amounts of Blood. B. Kramer and F. F. Tisdall.—p. 223.
Phosphoric Esters of Some Substituted Glucoses and Their Rate of Hydrolysis. P. A. Levene and G. M. Meyer.—p. 233.

Determination of Hippuric Acid in Urine.—By using 15 gm. solid sodium hydroxid in hydrolyzing the hippuric acid of 100 c.c. of urine at the boiling point for thirty minutes and subsequently acidifying, extracting, and titrating, results were obtained by Kingsbury and Swanson that were, in one experiment, 22 per cent. higher than the known titration value for this specimen of urine. It was also found that values from 10 to 33 per cent. higher than those obtained by the Folin-Flanders method resulted when urine was boiled with an equal volume of a mixture of concentrated nitric and sulphuric acids for thirty minutes in a process that gave 100 per cent. recovery when applied to solutions of pure hippuric acid. Oxidation of the urine with alkaline potassium permanganate after the plan of Hryntschak was tried and yielded promising results.

Source of Error in Testing for Bence-Jones Protein.—According to Miller and Sweet if urine, especially of dogs, containing a small amount of serum protein is allowed to stand at room temperature for from eight to twenty-four hours after voiding, it will occasionally give a typical Bence-Jones protein reaction the desirability of using fresh urine when testing for this substance is obvious.

Determination of Sugar in Urine.—In the method devised by Benedict and Osterberg the urine is diluted so that the specific gravity does not exceed 1.030. Fifteen c.c. is treated with about 1 gm. bone-black (smaller quantities of both may be used if desired). The mixture is shaken vigorously occasionally for from five to ten minutes, and then filtered through a small dry filter into a dry flask or beaker. From 1 to 2 c.c. of the urine filtrate is measured into a test tube which is graduated at 25 c.c., and if the volume used was less than 3 c.c. enough water is added to make the volume exactly 3 c.c. Then exactly 1 c.c. of 0.6 per cent. picric acid solution (best prepared from dry picric acid) and 0.5 c.c. of 5 per cent. sodium hydroxid solution are added. Just before the tube is ready to be placed in boiling water 5 drops of 50 per cent. acetone (this should be prepared fresh every day or two by diluting some pure acetone with an equal volume of water) is added taking care that the drops fall into the solution and not on the sides of the tube. The tube is shaken gently to mix the contents, and placed immediately in boiling water for from twelve to fifteen minutes. The standard solution is simultaneously prepared by treating 3 c.c. of pure glucose solution (containing 1 mg. of the sugar) exactly as described for the unknown solution and heating simultaneously. The pure glucose solution containing 1 mg. of the sugar in 3 c.c. of solution will keep indefinitely if preserved with a little toluene. The authors have not been able to find a colored solution which matches the colored product of the reaction and which is permanent.

Potassium Content of Blood.—The potassium content of normal human blood serum amounts to rather less than 20 mg. per hundred c.c., while for whole blood the figures are eight to twelve times this amount. In a series of seven cases of nephritis with marked nitrogen retention no increase in the potassium content of the serum or whole blood was noted by Myers and Short. On the contrary, the potassium content of the whole blood was diminished, apparently due in large part to an associated secondary anemia. In none of the pathologic cases were abnormal figures for the potassium of the serum found when the serum was separated within two hours after the blood was drawn.

Determination of Inorganic Elements in Blood.—A method is described by Kramer and Tisdall by means of which sodium, potassium, calcium, and magnesium may be quantitatively determined on only 7 c.c. of blood. The basis of this method is deproteinization by means of trichloroacetic acid. The quantitative determination of each of these elements is then made on aliquots of the supernatant fluid by modifications of procedures recently described for serum. The concentration of these elements in 100 c.c. of human blood were as follows: sodium, from 170 to 225 mg.; potassium, from 153 to 201 gm.; calcium from 5.3 to 6.8 mg.; and magnesium, from 2.3 to 4 mg. The concentration of these elements in normal blood varies more than in normal serum. This is due to the variations in the corpuscular content of the blood.

Maine Medical Association Journal, Portland

September, 1921, **12**, No. 2

Nephritis in Childhood. J. L. Morse.—p. 39.
Study in Evolution. M. J. Worcester.—p. 48.
Report of Several Rare Cases of Skin Diseases. R. B. Josselyn, Portland.—p. 53.

Medical Record, New York

Sept. 17, 1921, **100**, No. 12

*Pathogenesis of Dupuytren's Contraction of Palmar Fascia. W. H. Byford, Chicago.—p. 487.
Postsomatic Psychosis. B. Lemchen, Chicago.—p. 491.
B. Acidophilus: Its Bacteriological Characteristics and Possible Therapeutic Significance. L. M. Gompertz, New Haven, Conn, and M. G. Vorhaus, New York.—p. 497.
What State Demands of Its Sentinels of Mental Health. D. A. Laird, Iowa City.—p. 500.
Sixty-Five Cases of Cervical Ribs. I. S. Trostler, Chicago.—p. 504.
Lacerations of Cervix. I. W. Kahn, New York.—p. 506.

Dupuytren's Contraction Result of Infection.—Byford suggests that dupuytren's contraction is frequently associated with and closely allied to rheumatism and is probably due to bacterial action at some point other than the palmer fascia. The most common site of this infection is in the teeth.

Oct. 1, 1921, **100**, No. 14

*Clinical Indications of Etiology of Diabetes. J. W. Mitchell, Morristown, N. J.—p. 575.
Cancer a Mutiny of Body Cells. L. D. Bulkley, New York.—p. 581.
Synergistic Analgesia with Nitrous Oxid-Oxygen and Magnesium Sulphate. J. T. Gwathmey and J. Greenough, New York.—p. 583.
Recognition and Correction of Enteroptosis in Children. C. G. Kerley, New York.—p. 584.
Gonorrhea in Women from Standpoint of Diagnostician: Its Complications and Treatment. W. H. Hoak, Baltimore.—p. 585.
Iron as a Growth Factor in Infancy. L. Berman, New York.—p. 588.
Etiology and Treatment of Gastric Hyperacidity. J. Katz, New York.—p. 591.
An Epidemic of Measles at an Indian Agency. E. Rice, Kelseyville, Calif.—p. 592.

Etiology of Diabetes.—The records of 229 diabetic patients have been analyzed by Mitchell with a view to suspected etiologic agencies. His study is based on 116 diabetics who could give reasonably trustworthy statements concerning diseases in their grandparents (exceptionally the great grandparents), parents, uncles and aunts, cousins, nephews and nieces, and children. It is known that some races and families are specially subject to infectious or toxic damage of certain viscera; the lesions are readily revealed by necropsies, and clinical histories show the high frequency of the hereditary association. When an individual, with or without hereditary susceptibility, becomes potentially diabetic through pancreatic injury, overeating (perhaps of carbohydrate especially) and obesity contribute to increase this tendency and develop an active diabetes, while abstemious living may keep the disorder latent throughout life. Because the degree of pancreatic damage which suffices for active diabetes in an obese person is insufficient for producing it in a thin person, diabetes developing in thin persons is generally more severe than that which occurs in the obese. Prevention of diabetes, even in the susceptible families, may be expected more and more from prevention of the primary cause, through prevention and improved treatment of infections. Avoidance of gluttony (in carbohydrate or other food) and of obesity Mitchell says may be expected to prevent a large proportion of latent cases from developing. Precautions against infections (early removal of threatening foci in teeth, tonsils, appendix, gallbladder, etc.) and against dietary excesses are most important in the members of predisposed families.

Missouri State Medical Association Journal, St. Louis

September, 1921, **18**, No. 9

Internal Podalic Version. L. Dorsett, St. Louis.—p. 303.
Problem of Posterior Position. B. G. Hamilton, Kansas City.—p. 305.
Radium Treatment of Uterine Cancer. C. O. Donaldson, Kansas City.—p. 308.
Clinical Manifestations of Gallbladder Infection. H. S. McKay and J. C. Lyter, St. Louis.—p. 311.
Cystitis: A Symptom or a Disease. C. K. Smith, Kansas City.—p. 313.
*Sarcoma of Brain with Secondary Actinomyces Simulating Lethargic Encephalitis. W. A. Clark, Jefferson City.—p. 321.
Burns. H. E. Pearse, Kansas City.—p. 323.

Cerebral Sarcoma Simulating Lethargic Encephalitis.—Headache and drowsiness were the first symptoms in Clark's case. This was followed by general weakness, listlessness and inarticulate speech. The patient was in a semistuporous condition with tendency to fall asleep when not talking but could be easily aroused and answered questions intelligently. His face had a peculiar masklike expression and gave the impression of some involvement about the seventh nerve. The tongue was coated with a peculiar sticky, whitish material and the breath was so bad that nothing could describe it except "rotten." The pupils were normal, as were also all reflexes. Spinal fluid Wassermann reaction was negative. After a few days, he made no effort to pronounce words right and would reply to questions in a very indistinct whisper. This whispering voice and frequent movement of the lips without a whisper persisted for the next two weeks, often though only when he was aroused by questions asked in a loud tone of voice. He took some nourishment but seemed to have no desire for food. For ten days, he slept practically all the time, only rousing up about 4 a. m., and became partially awake, at which times he seemed restless and gave evidence of some pain in the head. Hiccup was very troublesome during the entire sickness and almost invariably arose when anything entered the stomach, even water. Death occurred six weeks after the onset of these symptoms. At the necropsy, the chief lesion was a tumor, for the most part fairly circumscribed, located in the lateral ventricle of the left cerebrum. The tumor filled the pars centralis of the ventricle, and swinging around the thalmus, occupied a portion of the anterior and inferior cornua, but did not reach into the posterior cornu. In addition to the tumor mass, there was a large, irregular lesion of colliquative necrosis, located in the posterior half of the cerebrum, and embracing in depth approximately its middle third. This lesion, the most of which washed out when the cerebrum was opened, extended posteriorly into the lateral inferior portion of the occipital lobe, and reached anteriorly to the posterior margin of the lentiform nucleus and the cortex of the posterior insula. Sections from both the more circumscribed tumor and the edges of the necrotic lesion showed a mixed cell sarcoma, mainly of the large spindle cell type. The edges of the necrosed part particularly were complicated by the presence of a definite inflammatory reaction. The histologic complex was characteristic of certain forms of the infectious granuloma. Even under ordinary stains, a filamentous type of organism was visible, and by the positive Gram stain it appeared in characteristic thread-like and branching form, with frequent clubbed ends, both thickly scattered and in focal clumps. The minute yellow foci of macroscopic description could be identified with these clumps. From the gross yellow points, the anaerobic conditions of growth, and the greater thickness of the filaments (at least three micra, and visible under low power), the probabilities all appeared to be in favor of an actinomyces rather than a nocardia infection.

Neurological Bulletin, New York

July, 1921, **3**, No. 7

*Neuroses in Business Life. L. Casamajor, New York.—p. 237.
Cyst of Left Cerebellopontine Angle. O. H. Strong, New York.—p. 243.
*Dystonia Musculorum Deformans. H. S. Howe, New York.—p. 253.
Atypical Forms of Epidemic Encephalitis. C. Rosenheck and L. H. Cornwall, New York.—p. 259.
Case of Optic Atrophy. I. J. Sands, New York.—p. 265.

Neuroses in Business Life.—Casamajor presents illustrative cases which fall into three groups: (1) the inadequate; (2) the dissatisfied; (3) the generally maladjusted. The dissatisfied group is the largest, for it includes the great majority of the neuroses of business life. The neurosis arises in the individual who likes the remuneration he gets from his work but dislikes the work itself and the type of life it forces him to lead. The symptoms are not usually severe and most of these patients struggle on without applying for medical aid. However, should the patient suffer an accident for which the employer could be held responsible, a typical traumatic, litigation neurosis might easily appear. The difficulties of the generally maladjusted in business life are only a part of their general maladjustment. The maladjustment to the home life is of much greater importance, and the work is a means of escape from the home. The similarity between the neuroses of business life and the war neuroses is quite obvious. Dissatisfaction is ever rife throughout industrial life and the neurosis is a way out of a difficult problem.

Dystonia Musculorum Deformans.—One point of interest in Howe's case is that while in nearly all of the recorded cases the patients have been Jews; his patient's mother only was of Jewish blood. In most instances the first disturbance has been noted in one of the lower extremities, while this patient's symptoms commenced in the trunk with a shrugging of the shoulders. In but few of the reported cases has there been noted disturbance in the musculature innervated by the cranial nerves. In the patient whose history is here recorded, nine months after the onset the voice began to quaver, and six months later disturbance was so marked that her speech was almost unintelligible. This condition persisted for over three years and then improved. Nine months after the onset there were said to have been involuntary ocular movements. These, however, persisted only a short time and were not present while the patient was under Howe's observation.

Oklahoma State Medical Assn. Journal, Muskogee

September, 1921, **14**, No. 9

Plea for a More Thorough Examination in Diseases of Chest. J. W. Nieweg, Duncan.—p. 229.
Problems of Heart Troubles from Standpoint of General Practitioners. J. H. Scott, Shawnee.—p. 231.
Outline for Routine Examination of Heart and Circulatory System. F. J. Wilkiemeyer, Muskogee.—p. 233.
Incisions Used in Gallbladder Surgery. W. P. Fire, Muskogee.—p. 237.
Postoperative Tetany Dues to Sodium Bicarbonate in a Baby Three Weeks Old Following Rammstedt Operation. C. V. Rice, Muskogee.—p. 238.

Surgery, Gynecology and Obstetrics, Chicago

September, 1921, **33**, No. 3

*Mobilization of Elbow by Free Fascia Transplantation: Report of Thirty-One Cases. W. R. MacAusland, Boston.—p. 223.
*Section of Anterolateral Tract of Cord for Relief of Intractable Pain Due to Spinal Cord Lesions. W. E. Leighton, St. Louis.—p. 246.
*Bone Atrophy. Study of Changes in Bone Which Result from Nonuse. N. Allison and B. Brooks, St. Louis.—p. 250.
Delayed Transfer of Long Pedicle Flaps in Plastic Surgery. V. P. Blair, St. Louis.—p. 261.
Fractures of Transverse Processes of Lumbar Vertebrae. G. G. Davis, Chicago.—p. 272.
*Cavernous Hemangioma of Left Lobe of Liver. C. H. Peck, New York.—p. 277.
Linitis Plastica: Report of Case. F. P. Palmer, W. W. Watkins and H. P. Mills, Phoenix, Ariz.—p. 281.
Interstitial Tubar Pregnancy: Report of Two Cases. S. Di Palma, New York.—p. 285.
*Laminectomy for Meningitis. R. Hill, St. Louis.—p. 288.
*Two Flap Low Incision Cesarean Section. An Operation Applicable After an Efficient Test of Labor. A. C. Beck, Brooklyn.—p. 290.
Dangerous Intraperitoneal Hemorrhage from Uterine Fibroid. J. L. Ransohoff and M. Dreyfoos, Cincinnati.—p. 296.
Surgical Treatment of Acute Pelvic Infections in Women. F. G. Dubose, Selma, Ala.—p. 299.
Treatment of Gonorrhea in Lower Genito-Urinary Tract in Women. C. C. Norris, Philadelphia.—p. 308.

Free Fascia Transplants in Elbow Arthroplasty.—MacAusland reviews the various procedures that have been employed in arthroplasties of the elbow and describes a method he has used in twenty-eight cases in which a piece of fascia lata is used as interposing material.

Section of Cord in Cord Lesions.—An experience in four cases in which Frazier's method was used, leads Leighton to believe that the operation will produce a permanent relief in any lesion below the thoracic level. In cases of gastric crises the section will have to be made higher than the sixth thoracic segment, and Leighton sees no reason why it should not be made as high as the second or third thoracic. He would also add to the operation section of the posterior nerve roots which are present in the field, as this would destroy sensory impulses which reach to a higher level and are not touched in the section of the anterolateral columns since this section includes only pain impulses which have crossed to the epinothalamic tract below this level. The removal of four laminae instead of two and removal of four posterior roots would bridge the gap not included by the section of the anterolateral columns. A bilateral operation should be done in all tabetics and in cases of inoperable tumor of the cord or such cases as reported by Beer of metastatic pelvic tumors. The advice of Spiller that the incision of the cord might be carried forward even including the anterior horn or motor root in the thoracic region would appear to be a good one as little harm could be produced by it. The greatest danger is in cutting too far posteriorly and thereby injuring the pyramidal tract.

Study of Bone Atrophy from Nonuse.—Three methods were employed by Allison and Brooks to prevent use of the foreleg of a dog: (*a*) section of the brachial plexus, resulting in partial or complete paralysis; (*b*) excision of upper end of humerus, resulting in a flair joint; (*c*) plaster-of-Paris fixation. In each group of experiments the results of nonuse for varying periods of time were studied. The degree of atrophy of the bone was directly proportional to the degree of nonuse regardless of the method used to produce the nonuse. There is no evidence warranting the assumption that any disease process plays any rôle in the production of bone atrophy other than its effect on use. That bone atrophy is not the result of diminished circulation of blood is shown by the fact that bone atrophy rapidly develops in the acute inflammatory diseases which limit the function of an extremity. Bone absorption is an active process and the circulation of the blood is necessary to its progress. The process of bone atrophy is not a change in the characteristics of bone as a tissue. The process of bone atrophy is not a change in the characteristics of bone as a substance. The process of bone atrophy is a change in the amount of bone present. This affects the size, shape, thickness, length, weight, and texture of the whole bone and accounts for its changes in gross anatomy, breaking strength, and chemical composition. The chemical composition, breaking strength and regeneration of bone remain unchanged.

Hemangioma of Liver.—In Peck's case the tumor weighed 3 pounds, 14 ounces. Extirpation of the entire left lobe of the liver was followed by recovery. The patient was a woman, aged 34.

Laminectomy for Meningitis.—Hill advocates laminectomy with free spinal drainage in cases of meningitis of streptococcus or staphylococcus origin. He cites two cases.

Two Flap Cesarean Section.—A modification of the operation first described by Kroenig is reported on by Beck. It has been done twenty-nine times by four operators without a fatality. The uterus is exposed through a transverse or mid-line incision below the umbilicus. The peritoneum is incised transversely about 2 cm. above the bladder. An inferior flap is obtained by stripping the bladder off from the anterior surface of the uterus, as in an abdominal hysterectomy. The upper flap is made by gently passing a pair of scissors under the peritoneum. The uterus is incised in the midline after exposing the denuded area by retracting the two flaps. Extraction of the child is accomplished by using one hand as a vectis, and making downward pressure on the fundus. If necessary, forceps may be used to facilitate the delivery. Before separating and removing the placenta, catgut-traction sutures are passed through the lower and upper angles of the uterine wound. Traction on these two sutures brings the entire wound into view and protects the peritoneal

cavity from spill while the placenta and membranes are being removed. The incision in the uterus is closed by two series of interrupted sutures. The first passes through the entire wall down to the endometrium, while the second goes through only the outer half of the muscle wall. Each suture, in the latter or superficial series, is placed midway between the deep ones. The upper peritoneal flap is brought down over the superior portion of the closed uterine incision and secured by several interrupted sutures. The remainder of the denuded surface is covered by bringing the lower flap about 1 cm. above the original incision. In this manner the peritoneal flaps are lapped and thoroughly seal the wound in the uterus.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

July-September, 1921, **18**, Nos. 211-213

Case of Oxycephaly. B. Myers.—p. 113.
Rickets. J. Burnet.—p. 124.
Abnormal Metabolism in Infancy and Its Relationship to Symptomatology. W. McK. Marriott, St. Louis.—p. 129.
Paralysis of Eye Muscles Occurring in Connection with Mastoiditis; Recovery. W. M. Mollison.—p. 135.

British Medical Journal, London

Sept. 17, 1921, **2**, No. 3168

*Renal Efficiency Tests. H. Maclean and F. D. Boyd.—p. 425.
Problems Presented by Hemorrhage in Connection with Operations on Tonsils. A. B. Kelly.—p. 431.
Conditions Predisposing to Hemorrhage in Tonsil Operations: Contraindications to Operation and Prophylactic Measures. J. F. O'Malley. —p. 433.
Influence of Operative and Anesthetic Technic on Serious Hemorrhage in Operations on Tonsils. H. Tilley.—p. 435.
Surgical Removal of Tonsils: Local Methods of Arresting Serious Hemorrhage from Tonsillar Bed. I. Moore.—p. 437.
Practical Considerations on Treatment of Hemorrhage During and After Operations on Tonsils. D. McKenzie.—p. 440.
Ligature of External or Common Carotid Vessels in Serious Tonsillar Hemorrhage. T. H. Just.—p. 441.
Treatment of Collapse Following Serious Loss of Blood in Operations on Tonsil. T. H. Just.—p. 442.
Place of Anesthetist in Operations on Tonsil. G. A. G. Barton.—p. 443.
Influence of Operative Technic in Prevention of Hemorrhage. E. M. Woodman.—p. 444.
An Artery Forceps for Ligatures in Tonsillar Bed. G. Chubb.—p. 445.
Use of Clamp in Treatment of Tonsillar Hemorrhage. E. Watson-Williams.—p. 445.
Observations on Ossiculectomy. J. Dundas-Grant.—p. 446.
Anthrax in Nasal Cavity. Z. N. Pasha.—p. 446.

Renal Efficiency Tests.—The importance of blood urea and nonprotein nitrogen estimations, the diastatic test, various dye tests, the "urea concentration test," Ambard's coefficient of renal excretion, urea concentration factor, salt tolerance tests, relation of blood pressure to renal damage are discussed by MacLean as being the most useful methods at present at our disposal for ascertaining the state of the renal function. He suggests the following scheme for the examination of a renal case; with the exception of the determination of blood urea and the estimation of diastatic activity, all the tests can easily be carried out by the general practitioner with the simplest of apparatus. All the information required can be obtained by means of the tests described without carrying out either the blood urea or diastatic tests. The presence of protein and casts is no evidence of the extent of renal damage. Albumin may be present, even accompanied by casts, in quite efficient kidneys. To the relative amounts of albumin and globulin little importance is to be attached, except perhaps occasionally in the case of children and young people. Boyd states that the estimating of the nonprotein nitrogen of the blood as an indication of renal activity, and as a guide to dietetic treatment in nephritis, cannot be overestimated. Speaking generally, it may be stated that if the nonprotein nitrogen rises above 100 mg. per hundred c.c. the duration of the illness may be reckoned in days—seldom in weeks. The consideration of the soluble nitrogen of the blood as a test of renal function is of the greatest importance from a therapeutic standpoint. Without a knowledge of the proportion of nonprotein nitrogen of the blood the adequate dietetic treatment of a case of nephritis is impossible. If the soluble nitrogen content of the blood is raised, a rigid protein-free diet will have a definite beneficial effect in diminishing the waste products in the circulating blood and in relieving symptoms. But this rigid protein-free diet is not always either necessary or desirable, and it is only by a consideration of the soluble nitrogen content of the blood that one is able to say whether it be necessary or no.

Edinburgh Medical Journal

September, 1921, **27**, No. 3

Subacute Bacterial Endocarditis. F. D. Boyd.—p. 129.
*Pituitary Gland in Children. J. Fraser.—p. 136.
*Case of Adenoma of Bile Ducts. D. M. Greig.—p. 145.

Pituitary Gland in Children.—On comparing the pituitary of the child with that of the adult, Fraser found that the variation in the size of the pituitary lake was apparently a feature distinctive to the child, or at least to the period between birth and adolescence. A series of forty pituitary glands obtained from children between the ages of 1 and 12 years were examined. The results have convinced Fraser that in children the pituitary gland has distinct periods of activity and rest. The capacity of the pituitary lake is closely related to the condition of the pars intermedia, for it has been found that when the pars intermedia is in active state, the pituitary lake is distended with content, while a pars intermedia in a resting state is accompanied by a slitlike and empty lake. While the pars intermedia is in a resting state the lake is small, and in certain cases practically empty. As the pars intermedia becomes more active, secretion begins to accumulate within the lake until it becomes distended to a considerable degree. The pars intermedia then returns to its resting state, and though the distention of the lake may continue for some time after the active condition of the pars intermedia has passed, its capacity gradually diminishes, and it returns again to a slitlike space. The active stage of the anterior lobe is synchronous with the active stage of the pars intermedia, and is partly preliminary to and partly synchronous with the distention of the pituitary lake. As the "active" stage subsides and the production of secretion diminishes, the vessels become capable of dealing with the condition, and the pituitary lake is gradually emptied in preparation for a succeeding cycle. The active changes in the gland are demonstrated in the pars intermedia, and in the anterior lobe. The changes have no relationship to any morbid condition. The specimens examined have been obtained from children who have succumbed from widely different types of disease.

Adenoma of Bile Ducts.—In Greig's case a series of closed cysts, in immediate relation to, but not in communication with, the bile ducts, had formed a tumor which not only compressed the common duct or the hepatic ducts, interfering with the excretion of bile from the liver, but had also prevented the influx of bile into the gallbladder. The appearances of the cyst wall are consistent with those of an adenoma of bile duct origin in which the lumina of several of the acini or bile ducts, have become dilated to form one large and several smaller cysts. In the wall of the large cyst a slow inflammatory fibrosis has taken place, causing compression atrophy of the gland elements at the base of the cyst.

Indian Medical Gazette, Calcutta

August, 1921, **56**, No. 8

Glaucoma and Epidemic Dropsy. F. P. Maynard.—p. 281.
*Value of Sodium Morrhuate and Sodium Linate in Tuberculosis and Leprosy. C. Davies.—p. 283.
Four Years' Surgery in an Indian General Hospital in Mesopotamia. M. L. Treston.—p. 283.
Filariasis, Elephantiasis and Allied Conditions. S. Sundar.—p. 294.
*Unusual Case of Abdominal Injury. C. Davies.—p. 298.
Blackwater Fever in Khondmals, Orissa. K. Daleppa.—p. 299.
Case of Hemophilia. H. N Bagchi.—p. 299.

Value of Sodium Morrhuate and Sodium Linate in Tuberculosis.—Davies is convinced that many of his patients have derived considerable benefit from sodium morrhuate. In two cases of pulmonary tuberculosis associated with fistula-in-ano, one treated with sodium morrhuate and the other with sodium linate, hemorrhage took place from the fistula after injection. Davies has used specimens of sodium morrhuate which were distinctly irritating on subcutaneous injection and did not seem to be of much therapeutic value. A specially prepared sodium linate was nonirritating and appeared to be of considerable therapeutic value in both tuberculosis and

leprosy. Davies suggests that composition of these preparations as used at present, is not constant hence the divergence of opinion as to their therapeutic value.

Trauma of Liver.—Davies cites the case of a boy who was struck on the abdomen by a falling log. Protruding from the umbilicus, apparently, was a dark red mass about the size of a tangerine orange. It was found to consist of a piece of liver and a small piece of omentum. The aperture through which this passed was not the umbilicus but about three-eighths inch to the left and about the size of the tip of the little finger. The patient made an uneventful recovery despite the presence of a large extravasation of blood in the abdomen.

Journal of Tropical Medicine and Hygiene, London

Sept. 1, 1921, **24**, No. 17

Etiology of Gangosa and Its Relation to Papulo-Circinate Yaws. F. Schmitter.—p. 229.
Blackwater Fever in Solomon Islands. N. Crichlow.—p. 231.
*Case of Myopathic Muscular Atrophy in a Negro. J. F. Corson.—p. 234.

Myopathic Muscular Atrophy in Negro.—In Corson's case a negro boy, aged 18, the disease began suddenly, and was caused by a fall he had one day at an age shortly before puberty. His right arm, just above the front of the elbow, was first affected, and he lost his voice at the same time. The condition appears to correspond with descriptions of Erb's juvenile type of myopathic muscular atrophy. It has been stated that the negro seems to enjoy largely an immunity to muscular dystrophy.

Glasgow Medical Journal

August, 1921, **14**, No. 2

Prolapse of Female Genitalia. J. N. Stark.—p. 65.
*Radical Cure of Femoral Hernia in Children. A. MacLennan.—p. 83.
Post-War Surgical Disabilities. J. A. Wilson.—p. 88.

Radical Cure of Femoral Hernia in Children.—After freeing the neck of the sac from the canal, a space is made by MacLennan round about the inner aspect of the canal for the reception of the sac (Macewen method for inguinal hernia). The sac is transfixed and ligatured for the requisite amount, the excess being cut off, while one end of the ligature is threaded backward and forward till the neck is reached. Then the needle enters the canal to emerge on the upper side of Poupart's ligament. The ligature is then fixed by a hitch in the usual way. When completed the patent canal becomes very evident. A small retractor is placed inside the canal and made to drag the external border, with the femoral vein, outward. The ramus of the pubes is incised along its upper border, and the pectineus turned downward; the exposed ramus is freed from periosteum. A Jacoël's bone staple is pressed into Poupart's ligament so as to include some of the fibers between its prongs. The points of the staple are accurately pressed against the bone and the staple hammered in. The sac fixation suture is then utilized to approximate such firm structures as may be present.

Lancet, London

Aug. 27, 1921, **2**, No. 9

Students' Guide — Session 1921-1922.—p. 423.

Sept. 17, 1921, **2**, No. 12

*Respiratory Efficiency in Relation to Health and Disease. M. Flack.—p. 593.
*Spina Bifida. F. C. Pybus.—p. 599.
*Studies from St. Andrews Institute of Clinical Research. II. Case-Taking Methods. J. H. P. Paton.—p. 603.
*New Method of Investigating Gastro-Intestinal Secretion. E. C. Dodds.—p. 605.
Case of Malignant Pustule with Multiple Lesions. R. T. Grant.—p. 606.
*Two Unusual Cases of Abdominal Tumor. E. C. Bevers.—p. 607.
Case of Paralysis of Soft Palate Following Nondiphtheritic Tonsillitis. J. P. Gray.—p. 607.
Case of Scurvy in Adult of British Isles. R. S. McClelland.—p. 608.

Respiratory Efficiency in Health and Disease.—Physical inefficiency Flack asserts is frequently associated with a state of respiratory insufficiency. He discusses the causes of deficiency, respiratory efficiency conditioned by hygiene and sanitation, and reviews the present knowledge concerning respiratory function. He draws attention to the importance of the correct muscular movements of breathing in massaging the abdominal contents. The descent of the diaphragm in inspiration, the contraction of the abdominal wall in expiration provide massage mechanism which plays an important part in the preservation of the tone of the smooth muscle of the abdominal contents. One of the present day evils is constipation, which does not occur when a good tone of the abdominal wall is preserved. Equally as important is the fact that the state of semiconstipation is abolished, the state in which the bowels, although acting daily, act only in insufficient fashion without the use of occasional purgatives. Good tone of the muscles constituting the natural abdominal belt play an important part in preserving a healthy condition of the abdominal contents.

Familial Spina Bifida.—In the course of a general discussion of this subject Pybus refers to four children in one family who had some degree of spinal defect. The eldest died at the age of 18 months with spina bifida, the type of which is unknown, and with hydrocephalus. The second child, now aged 10 years, has a spina bifida occulta, indicated by a scar and depression in the upper dorsal region and by slight scoliosis. The third child had a large meningomyelocele in the sacral region. This was operated on with excellent results. The patient is quite well and without deformity, the only symptom present being that she is perhaps unable to hold her urine as long as usual. The fourth and last member of the family has the least defect, which is an exaggerated postanal dimple.

Case Taking at St. Andrews' Institute.—The general scheme of case taking in use at St. Andrews' Institute for Clinical Research is presented by Paton. The most essential part of the scheme is that dealing with after-history. Arrangements are made of ensure that each patient will be again seen from time to time, and the records of his condition and any subsequent illnesses are added to the case. In this way in the course of years the elements of a scientific system of prognosis will be built up—prognosis, that is to say, based on the outcome of actual cases, and not on the vague fears engendered by abnormal phenomena whose significance is not known. Special symptoms sheets are also used. Each practitioner on the staff has, in the institute, a private room which is reserved for two hours in the day for the examination of research cases. During the rest of the day he is at liberty to use it as his private consulting room. He selects cases suitable for research from his private practice and investigates them during his research hours. Each member of the staff is at liberty to consult any of his colleagues at any stage in the case; in order that the utmost benefit may be derived from this privilege, each member of the staff makes himself specially familiar with the literature of one particular branch of clinical medicine—cardiology, neurology, and so on. The necessary chemical, bacteriologic, hematologic and radiologic investigations are carried out by the special departments, and with each specimen or case full clinical notes are supplied to the special department. When the notes of each case are completed they are read at a full meeting of the staff and discused in detail. Indices are kept of all symptoms recorded, and of the leading symptoms and provisional diagnosis of each case, and arrangements are made to ensure the return of the patient at regular intervals. Finally each case is considered in detail by a special committee, whose duty it is to classify and tabulate the findings, and to see that all cases are utilized for special investigations. If this committee finds that a case taken by one member of staff has some bearing on special work in charge of another it is its duty to inform the latter of the fact. This committee also keeps a note of the date on which each patient should return; and at the beginning of each month a list is sent to each clinician of the patients whom he should arrange to see during that month. In addition to the regular research work and the weekly reading of cases, one afternoon in each week is devoted to the discussion of some subject of interest which is chosen by the clinical staff and is introduced by the member who happens to be specially interested in it.

Investigating Gastro-Intestinal Secretion.—By taking samples of the alveolar air at intervals after a meal, Dodds was able to demonstrate that the tension of carbon dioxid undergoes certain definite changes in response to the amount of secretion poured out (*a*) by the stomach, (*b*) by lower portions of the alimentary tract. The curve of alveolar carbon

dioxid tension so obtained correspond closely with the curve of secretion of gastric hydrochloric acid. When acid is removed from the blood during gastric secretion the reaction of the blood tends to shift to the alkaline side. The shifting is prevented by retention of the volatile acid, carbon dioxid, the tension of which rises in the blood, and hence in the alveolar air. Later, when the alkaline intestinal and pancreatic secretions are poured out, the reaction of the blood tends to shift to the acid side, and hence acid in the form of carbon dioxid must be eliminated. This is brought about by a lowering of the carbon dioxid tension in the blood, and therefore in the alveolar air. This method has been applied to a number of pathologic cases, examples of which are given.

Splenic Cyst; Extraperitoneal Fibromyoma. — Bevers reports a case of large splenic cyst in which a diagnosis of hydronephrosis had been made until after cystoscopy and catheterization of the ureters; even then a cystic tumor of renal origin could not be excluded. The second case was one of large extraperitoneal fibromyoma which may have originated from the apex of the bladder or the urachus; seeing that the tumor was firmly attached to the apex of the bladder and the umbilicus, the two attachments of the urachus, it is assumed that it originated in the latter structure.

Medical Journal of Australia, Sydney

July 30, 1921, **2**, No. 5

Criticism on Modern Opinions and Erroneous Impressions Held by Profession and Laity Regarding Pulmonary Tuberculosis. A. Stewart. —p. 75.
Notes on Typhoid Carrier. C. T. Champion de Crespigny.—p. 79.
Reports of Cases. Torsion of Small Intestine. L. O. Betts.—p. 81.

Aug. 13, 1921, **2**, No. 7

Heat Losses of Body Connected with Surgical Operations Under Ether Anesthesia. C. F. Corlette.—p. 115.

Aug. 20, 1921, **2**, No. 8

Effect of Legislative Control on Incidence of Antenatal Syphilis. J. H. L. Cumpston.—p. 133.
Some Remarks on Dento-Alveolar Sepsis. W. B. Dight.—p 136
Radiography and Dental Affections. J. G. Edwards and W. A. Edwards. —p. 138.

Aug. 27, 1921, **2**, No. 9

Pulpless and Vital Teeth. H. C. Moxham.—p. 153.
*Intravenous Injections of Antimony Tartrate in Treatment of Bilharziosis. H. K. Pavy.—p. 155.

Antimony Tartrate Intravenously in Bilharziasis.—Ten cases have been treated by Pavy. The patients were not confined to bed nor dieted. Neither did they receive any other form of treatment before, during or after the injections. The solution used consisted of 0.06 gm. tartar emetic dissolved in 5 c.c. physiologic solution of sodium chlorid. This solution was injected slowly into a suitable vein well below the elbow joint. The initial dose in all cases was 2.5 c.c. of the solution (one-half grain tartar emetic). Patients who showed a good tolerance for the drug, were worked up to a 10 c.c. (2 grains) dose in from four to six injections and kept on this dose with occasional remissions to a smaller dose. Others had to be worked up more gradually, but in all but one 0.12 gm. was given continuously for a considerable period. Doses of 0.18 gm. were given in two cases, but as the majority of the patients had moderately severe attacks of coughing with nausea and occasional vomiting after administration of 0.12 gm., it was not thought advisable to push the dose further. The average among given was 1.8 gm. (27 grains). This usually meant that by the end of the course no ova were present in the urine for four weeks. The injections were given every other day at first, later on three days a week. The condition of the patient and the results of urinary examination were considered in determining the amount. No local effects followed the injections unless some of the fluid escaped the vein. The same vein could be used repeatedly. One of the most interesting and constant features of the treatment was the rise in the percentage of eosinophil cells which occurred, the highest percentage being 4. The average increase was 12 per cent.

Medical Journal of South Africa, Johannesburg

July, 1921, **16**, No. 12

Syneresis of Agar. A. Pijper and G. J. Kraan.—p. 221.
Laboratory Aspect of Meningococcal Meningitis; Review of Infection and Immunity. S. Lister.—p. 228.

August, 1921, **17**, No. 1

*South African Case of Mycetoma ("Madura Foot") Caused by "Nocardia Indica (Discomyces Madurae"). W. Welchman and J. H. H. Pirie.—p. 6.
Treatment of Cerebrospinal Meningitis. A. P. Watkins.—p. 9.

Mycetoma in South Africa.—Welchman and Pirie claim that theirs appear to be the first recorded South African case of mycetoma due to *Nocardia indica*. Two interesting features were the spread of the causative organism beyond the limits of the foot to the subinguinal lymph nodes, and rapid disappearance of stump infection under neo-arsphenamin. This suggests the advisability of trying this drug for the primary infection.

Encéphale, Paris

July-August, 1921, **16**, No. 7

*Foot Clonus. J. K. A. Wertheim Salomonson.—p. 337.
*Reaction of Meninges to Tuberculosis. E. Flatau and N. Zilberlast-Zand.—p. 344. Cone'n.
The Pineal Gland. Laignel-Lavastine.—p. 361. Cont'n.
Case of Erotic Perversion. J. Capgras.—p. 367.
*Bleuler's Conception of Schizophrenia. E. Minkowski.—p. 373. Cone'n.

Foot Clonus.—The mechanism of simple and alternating foot clonus is discussed, with illustrations.

Reaction of Meninges to Tuberculosis.—In this concluding instalment, Flatau and Zand warn that tubercles with giant cells are found in the meninges in syphilis as well as in tuberculosis, and that the vascular lesions in both are much alike. With a tuberculous lesion elsewhere, the meninges may show signs of transient irritation or mild inflammation. There may be acute or subacute hemorrhagic meningoencephalitis in the tuberculous. When the tuberculous complain of obstinate headache or of a little stiffness of the neck, slight chilliness and slight fluctuations in the temperature, extra nourishing food and a change to the country or the mountains, with tonics, will often cure this transient meningeal reaction, even when the papillae already show signs of edema. This reaction of the brain and its meninges to the irritation from products generated in a tuberculous process in the bronchial glands or elsewhere is generally mastered by the organism in time, but this is hastened by general measures to improve the general tone. Lumbar puncture may aid. A circumscribed lesion of pachymeningitis or leptomeningitis may retrogress and heal. Traces of such have been found at necropsy. Lunz operated successfully in a case of the kind and Foerster reported 11 operative cases in 1911; 2 of Foerster's patients soon succumbed to spread of the meningitis, and 2 others later, after a few months of improvement. In 5 cases a complete or nearly complete cure was realized; some in this group were traced for up to two and a half years. Prince has also reported a successful case, Valkenburg 2 and Hasselt a case of improvement after the operation for circumscribed tuberculous meningo-encephalitis in a child of 4½, but fatal recurrence followed in a few months. Insular pachymeningitis is most amenable to surgical intervention, they say, but well limited leptomeningitis can also be given this treatment. In all cases, however, general treatment to tone up the whole organism should be instituted as early as possible. In short, a tuberculous process in the meninges must not be considered as inevitably incurable. The same principles of treatment should be applied here as with tuberculosis of other organs. A plate shows the microscopic findings in some cases of the kind, confirming the strictly localized character of the process, and the integrity of the rest.

Dementia Praecox as a Mental Disease.—Minkowski analyzes Bleuler's conception of schizophrenia and its import, quoting the latter to the effect that the evolution in the conception of dementia praecox represents a large part of the evolution of theoretic psychiatry in general.

Paris Médical

Aug. 27, 1921, **11**, No. 35

*Traumatic Shock. J. Guyot and G. Jeanneney.—p. 157.
*Autovaccine Therapy. Buc and A. Jacquelin.—p. 169.

Traumatic Shock.—Guyot and Jeanneney analyze the nervous, circulatory and humoral changes which characterize traumatic shock. They are all of the insufficiency type, subnormal functioning and temperature, subnormal blood pressure, and insufficiency of the circulation in general, with resulting accumulation of waste products.

Autogenous Vaccine Therapy.—The grave staphylococcus septicemia in the two cases reported, with numerous purulent foci, had dragged along for two months when prompt improvement and a cure followed autovaccine therapy.

Sept. 3, 1921, **11**, No. **36**

Ophthalmology in 1921. F. Terrien.—p. 173.
The Prognosis with Acute Glaucoma. A. Cantonnet.—p. 181.
Ocular Complications of Erysipelas of the Face. P. Prélat.—p. 182.
Otorhinolaryngology in 1921. Dufourmentel.—p. 185.
Nasopharyngeal Fibroids. P. Sebileau.—p. 191.
*Fracture of the Nose and Its Treatment. Jacques.—p. 199.
Stomatology in 1921. P. Fargin-Fayolle.—p. 201.
*Malignant Tumors of the Jaws. J. Bercher.—p. 205.

Fracture of the Nose.—Jacques explains that a fracture of the nose is a lateral displacement of the two bones proper of the nose, and this has to be promptly corrected or it heals rapidly in a disfiguring position. The luxation is easily corrected when done early, but by the next or following day the edema and secretions impede this, and it is necessary to cocainize the interior of the nose and sustain the bones on each side with a stout tampon smeared with petrolatum. This holds the bones in place better than anything applied outside. The tampon is changed at the second or third day which allows the nose to be modeled more perfectly. Systematic and persevering massage is preferable to any prosthesis or other device to be applied outside. The reduction of the fracture is painful and far from easy when an interval of from two to seven days has elapsed, and by the end of the second week the outcome is uncertain.

Cancer of the Jaw.—Bercher gives an illustration showing the four tubes of radium fitting tight against the neoplasm for cross-fire exposure. They are held in the proper place by being embedded in a prosthesis made on a plaster cast by a dentist. It fits over the jaw—the teeth in the region having been previously drawn—like a plate for false teeth. His experience testifies that it is better after the neoplasm has subsided under the radium to defer as long as possible the wearing of false teeth or of a prosthesis to close any abnormal cavity. The irritation from anything of the kind is liable to invite recurrence of the malignant disease.

Presse Médicale, Paris

Sept. 3, 1921, **29**, No. 71

*Acute Carbon Monoxid Poisoning. M. Nicloux.—p. 701.
Reconstruction of Nostril in Simple Hare-Lip. L. Ombrédanne.—p. 703.
*Isolated Culture of Typhoid Group Bacteria. P. P. Lévy.—p. 704.
Intraspinal Injection of Drugs in Emergencies. L. Cheinisse.—p. 706.

Carbon Monoxid Poisoning.—Nicloux emphasizes that the blood corpuscles even saturated with carbon monoxid are not devitalized at all, but are ready to resume functioning with a little aid, that is, when supplied with oxygen. In a case described, seventy-five minutes after the poisoning, and after 650 liters of oxygen had been administered by the pulmotor, the blood still contained 9.08 per cent. carbon monoxid, showing that 41.3 per cent. of the hemoglobin was saturated with it. The oxygen was pushed, and in about an hour this percentage was only 25.4, and four hours later, 8.3. The survival of this patient after apparent death for twenty-five minutes shows that even 9.08 per cent. of carbon monoxid in the blood is not fatal. In the cases on record in which death occurred with poisoning of 0.1, 0.3 or even 0.4, Nicloux is convinced that some other factor than this poison was responsible for the fatality. Hartridge experimented on himself, and found that distressing symptoms did not follow until he had surpassed the figures reached in this case. The slightest movement is liable to bring on vertigo and loss of consciousness. This occurred twice in this case, the man saying he felt well and wanted to go home, and becoming unconscious when he started to get up. The pulmotor had been used beginning five minutes after apparent death which kept up for twenty minutes longer. About 650 liters of oxygen had been used and more was given in the hospital, for twenty minutes each hour, to a total of 1,500 liters. The headache and vertigo disappeared after the first inhalation.

Isolated Cultures of Bacilli of Typhoid Group.—These bacilli grow upward more rapidly than others when conditions are made especially favorable for them, as in a U tube with sand. A simpler device for the purpose is to make a deep groove in the slanting gelose medium, from the tip of the tube half way up. The cutting edge of the platinum spatula is strong enough to make a groove 1 or 2 mm. deep. The tube is then turned till this grooved surface faces downward, and then the specimen of fluid stool is introduced to the very bottom of the tube, without touching the gelose until it reaches the bottom. The typhoid group of bacilli grow up into the groove before the colon bacilli have started to grow much.

Revue Franç. de Gynécologie et d'Obstét., Paris

June, 1921, **16**, No. 6

*Certain Metrorrhagias. P. Dalché.—p. 321.
*Indications with Ruptured Tubal Pregnancy. J. Vanverts.—p. 330.
*Impacted Fibroma in Pregnant Uterus. A. Grosse.—p. 336.
Prophylaxis of Cancer of Uterine Cervix. G. de Rouville.—p. 342.
Slitting the Cervix During Labor. M. Bénit.—p. 352.

Certain Metrorrhagias.—Dalché refers to uterine hemorrhages for which overactive or abnormal growth is responsible, or prolapse of the uterus, or some hemophilic tendency. When a healthy girl has overprofuse menstrual hemorrhages and hemorrhages between the periods from overactive growth and exuberant vitality, the tendency rights itself spontaneously in time, and this class of girls become fertile mothers, with tardy menopause. But when the metrorrhagia is accompanied by orthostatic albuminuria, hypertrophy of the heart, scoliosis, or other anomaly, or by premature sexual and mental development, there is usually ovarian derangement, and it is generally accompanied by derangement of certain other endocrine glands. Girls of this class are generally sterile and have a stormy menopause. Dalché is inclined to ascribe the scoliosis also to malfunction of the glands that preside over bone production, the disturbances favored by vicious attitudes and fatigue. Such girls require out of door life and exercise, possibly a little ergot, but the main reliance is on organotherapy. With a familial hemorrhagic tendency, ovarian and thyroid treatment has often proved successful in curing these virginal metrorrhagias. Cholemia is common in them, which suggests the participation of the liver. The metrorrhagias of the menopause for which prolapse of the uterus is responsible may be arrested by reduction of the prolapse and radium exposures, or the wearing of a pessary.

Ruptured Tubal Pregnancy.—Vanverts discusses whether it is ever possible to temporize in these cases, inclining to the view that the shock may be so grave that intervention may be more dangerous than a little delay. Operations have shown that the shock is not necessarily proportional to the amount of extravasated blood; even a very small quantity may induce the severest reaction on the part of the peritoneum. The threatening clinical picture seems to indicate such a profuse hemorrhage that a fatal outcome is imminent, but then the condition begins to improve and the phenomena gradually become attenuated, and with a little strychnin or camphorated oil the patient can be tided along until she has recuperated to some extent from the shock. Then the operation should follow at once without further delay. The only fatalities in Vanvert's ten cases were in a woman who had refused to allow the operation until after a delay of seven hours, and in a case in which four hours and a half had elapsed before the woman reached the hospital.

Fibroma in Pregnant Uterus.—The special features of Grosse's case were the rapid growth of the fibroma during the pregnancy, and its becoming impacted in the small pelvis and forcing up the uterine cervix while compressing neighboring organs, compelling hysterectomy before the fourth month.

Schweizerische medizinische Wochenschrift, Basel

Aug. 18, 1921, **51**, No. 33

*The Blood Pressure in the Tuberculous. N. Betchov and P. Farbarge-Vail.—p. 757.
*Operative Treatment of Pott's Disease. R. Scherb.—p. 763.
*The Mechanism of Coughing. F. Rohrer.—p. 765.
*Treatment of Cocain Poisoning. K. Mayer.—p. 767.
Etiology of Influenza and Encephalitis. J. L. Burckhardt.—p. 769.

The Blood Pressure in Pulmonary Tuberculosis.—The average blood pressure in 15 healthy persons living near the sanatorium (altitude 1,500 meters) was: systolic, 126 mm., diastolic, 75.5 mm. In 157 tuberculous patients, the corresponding averages were 119 mm. and 74.5 mm. But the averages in the cases with favorable outcome were 123 and

77. The averages in the 31 steadily progressing cases were 109 and 70. A fairly good condition was maintained in the 55 cases with systolic pressure averaging 119 and the diastolic 74.3 mm. Fully 61 per cent. of the cases with systolic pressure above the average ran a favorable course, as also 58 per cent. of those with normal pressure, but only 32 per cent. of those with pressure below normal. The systolic pressure was never found above normal in the cases with an unfavorable course, and it was normal only in 8 per cent. in this group, while in 33 per cent. it was below normal. The blood pressure thus varies comparatively little from normal. It was found absolutely above normal in 29 per cent. of the total tuberculous. One fact brought out by the research reported was that there did not seem to be any connection between the blood pressure and the tendency to hemoptysis. A tendency to tachycardia, however, was usually observed only in the cases with unfavorable course. The prognosis did not seem to be modified by hemoptysis.

Treatment of Pott's Disease.—Scherb relates that at about the same time that Albee published his bone grafting operation in Pott's disease, de Quervain had published an account of very similar intervention to reenforce the spine in two cases of luxation fracture. From the very start therefore, this bone graft reenforcement of the pathologic spine entered upon a broad field. Scherb denounces the original methods as too mutilating, saying that equally dependable results can be obtained by placing the implant at the side, in the niche between the vertebral arch and the spinous process, after scraping off the periosteum from each. He illustrates a case which demonstrates that this implantation at the concave side, without slitting the spinous process, answers every purpose and stands every strain. The implant lies nearer to the weight-bearing axis with this technic.

Mechanism of Coughing.—Rohrer explains that expectoration occurs only in the bronchi. In the narrower passages the secretions are moved along by the cilia or are resorbed by the lymphatics.

Treatment of Cocain Poisoning.—Mayer injected morphin before or after cocain in three frogs. The control frogs injected with cocain alone survived, while the morphin-cocain animals all died. He accepts this as evidence that morphin enhances the toxic action of cocain. The custom of injecting morphin before using cocain is therefore deleterious. Calcium chlorid, on the other hand, seems to inhibit the action of cocain. A small dose of cocain stimulates the frog heart while a large dose arrests its action, but calcium chlorid starts it to beating again. When the calcium chlorid was given first, the cocain had no toxic action. Further experiments showed that while calcium salts arrest the toxic action of cocain, potassium salts exaggerate it, in frogs at least.

Archivio Italiano di Chirurgia, Bologna

July, 1921, **3**, No. 6

*Treatment of Chronic Empyema. M. Donati.—p. 517.
*Vaccine and Serotherapy in Gonorrhea. L. Frassi.—p. 537.
*Reconstruction of Face. O. Vignolo.—p. 649.
*Fibroma of Mesentery. F. Niosi.—p. 657.

Chronic Empyema.—Donati reports with nine illustrations a case of chronic empyema with persisting fistula in which a complete cure was promptly realized by decortication of the lung supplemented by fastening the lung at different points to the wall of the chest. This obliterated the dead space, and insured the permanent expansion of the lung. The intervention is comparatively simple, he says, and is free from the mutilation entailed by thoracoplastic operations. Access was from the rear through a triangular flap, including three ribs. Nine catgut U stitches were taken through the interspaces and lung tissue, one in the diaphragm.

Vaccine and Serotherapy in Diagnosis and Treatment of Complications of Gonorrhea.—Frassi's monograph won the Paravicini prize. It is based on 146 cases of gonococcus orchitis-epididymitis treated with vaccine, twenty-three cases of joint complications, and other material, and the conclusions of the experiences of others the world around. There is a bibliography of five pages of titles. Everything tends to confirm, he says, the great value of the vaccine and serum in the diagnosis and treatment of the surgical complications of gonorrhea, especially when used in connection with surgical measures. Antibodies are found in the blood from the first days of gonococcus infection. The gonococcus passes early into the blood even when the infection seems a purely local process. Chilling, trauma, overexertion may favor the localization of a gonococcus infectious process. A general reaction to diagnostic injection of vaccine is not specific nor typical; a focal reaction is most common with complications in joints, the adnexa and epididymis. A negative reaction, however, is not conclusive, as the dose of vaccine may have been too small, or there may be mixed infection or the process may be so old that it is incapable of reactivation either by the skin, the intradermal or the ophthalmo reaction test. The deviation of complement test seems to be absolutely specific when positive, but is not conclusive when negative. Agglutination and precipitation tests are uncertain. As a rule, diagnostic tests with vaccine are more practical and have less inconveniences than serum tests, but the latter sometimes are surprisingly instructive, especially with joint complications. Autoserotherapy is giving good results, he says, and may be given a trial in suitable cases. During treatment with serums and vaccines new complications seldom develop. The pain and swelling in a joint may be relieved by a single injection, but the complete cure usually required from four to eight weeks, sometimes supplemented by other measures, especially radiotherapy. In orchitis or epididymitis the pain and swelling almost invariably subsided by the third injection, made on alternate days. The vaccine or serotherapy sometimes cures alone, but as a rule surgical measures are required to begin with. In the female, the pain and suffering from gonococcus adnexitis rapidly subside after the first injections. In recent cases the whole may subside, with resorption of exudates. The improvement under the vaccine may clear up an obscure diagnosis.

Reconstruction of the Face.—Vignolo's illustrations show the satisfactory outcome in a case which required reconstruction of the nose, lid region and cheek, after a shell wound.

Fibroma of the Mesentery.—The young woman developed fever and delirium the third day after removal of the fibroma plus 75 cm. of the small intestine. Torsion of the fibroma and ileus had hastened the operation. The tumor measured 11 by 18 cm. Niosi ascribes the fever and maniacal delirium for nine days to purely nervous factors as there was nothing to suggest an infectious process.

Pediatria, Naples

Aug. 15, 1921, **29**, No. 16

*Thymus Stridor. O. Cozzolino.—p. 729.
*The Abderhalden Reaction in Rachitis. A. Corica.—p. 744.
Postinflammatory Elephantiasis of Boy's Hands. C. Gallo.—p. 747.
*Congenital Atresia of Anus and Rectum. A. Vetri.—p. 749. Conc'n.

Stridor in Young Children.—Cozzolini has encountered 16 cases in which an abnormally large thymus was evidently responsible for the pronounced stridor observed in the infants from 1 to 11 months old. He applied radiotherapy to 8 of the infants, and a complete cure was realized in from one to four sittings, given twice a week with 3 mm. aluminum filter, and total of from 9 to 16 units. He explains that those who say that thymus stridor is not always curable in this way, mistake stridor of other origin for it. Finkelstein has reported a case in which necropsy revealed an unsuspected fistula between the trachea and esophagus. The rapid subsidence of the stridor is the touchstone in case of doubt. In one infant, after disappearance of the thymus stridor, a congenital larynx stridor became evident, which it had masked. In one infant the excessively large spleen subsided to normal outlines at the same time as the thymus. In 2 other children there was pronounced hyperplasia of the thymus but no stridor at any time. Enlarged glands and congested vessels may cooperate in the compression and induce a kind of erection in the thymus, exaggerating the stridor. In 4 of 7 cases examined with the roentgen rays, an unsuspected tracheobronchial adenopathy was revealed. The radiotherapy reduced the congestion in the glands and relieved the stridor even before the thymus felt much of an effect from it. The participation of the glands explains how the stridor can occur during both inspiration and expiration. The subsidence of the vascular-glandular-thymus congestion after sudden "thymus death" explains the paucity of the necropsy findings in many such cases.

The Abderhalden Reaction in Rachitis.—Corica found a positive response for suprarenal, thyroid and thymus tissue in six cases of florid rachitis, and for suprarenal tissue alone in two declining cases and in one after recovery. He thinks that this suggests that the suprarenals are predominantly involved in rachitis.

Congenital Atresia of Anus and Rectum.—Vetri reviews his extensive experience in this line and discusses the best technics for the various eventualities encountered.

Policlinico, Rome

Sept. 5, 1921, **28**, No. 36

*Eosinophilia with Enlarged Prostate. A. Cassuto.—p. 1195.
*Surgery of the Spleen. N. Martelli.—p. 1199.
*The Renal Factor in Paroxysmal Hemoglobinuria. T. Silvestri.—p. 1203.
The Malaria Complexion. G. Capuani.—p. 1205.

The Eosinophilia with Enlarged Prostate.—Cassuto has been recording the eosinophil count in 30 urologic patients, including 20 with hypertrophy or tumor in the prostate. One man, with carcinoma of the prostate, had 14 per cent. eosinophils; in 2 other cancer cases, there was slight or no trace of eosinophilia. In this group of 3 cancer cases there was polynucleosis, but the figure dropped to normal after removal of the malignant tumor in the prostate. The findings in the 27 other patients were too inconstant and conflicting to have any diagnostic value.

Surgery of the Spleen.—Martelli reviews his experience with splenectomy in three cases; splenopexy in two, and splenostomy in three for resection of hydatid cysts. Eosinophilia of from 7 to 18 per cent. gave the clue to the echinococcus nature of the spleen disease. Albuminuria was pronounced in two of the cases, and it subsided after the operation. Albuminuria may therefore aid in the differential diagnosis. It is evidently, like the eosinophilia, of toxic nature. The cyst was sutured to the lips of the laparotomy incision and the cure was complete in from three to six months. In two other cases of much enlarged malarial spleen, the adhesions were too numerous and close to allow splenectomy, and he merely fastened the spleen by the Jaboulay method. The results were excellent in one case with torsion and menace of gangrene. The other patient with advanced Banti's disease succumbed a week later to septicemia. In the three other cases, torsion of the much enlarged spleen had compelled splenectomy. Martelli remarks that although the hospital is in a hotbed of malaria, only these few operations have been done on the malarial spleen during the last five years, and these only for torsion. Years of experience have failed to demonstrate that the liver becomes secondarily pathologic as used to be supposed. Under supplementary roentgen exposures and heliotherapy the malarial spleen tends to return to normal size. Reexamination of the splenectomized patients showed a normal blood count.

The Renal Factor in Paroxysmal Hemoglobinuria.—Silvestri presents arguments to prove that the pathologic kidney may secrete substances which have a destructive action on the erythrocytes inside the vessels in the kidney. Among his arguments is the absence of hemoglobinemia in these paroxysmal cases of hemoglobinuria brought on by chilling or long walks. There is much to sustain the assumption of auto-anaphylaxis. The nerve centers and vasomotor nerves seem to be exceptionally excitable in these cases.

Rivista Critica di Clinica Medica, Florence

Aug. 15, 1921, **22**, No. 23

Diazo Reaction in Tuberculous Sputum. G. Granata.—p. 265.
*Motor Disturbances with Cerebellar Disease. G. Simonelli.—p. 267.

Cerebellar Disease.—Simonelli analyzes the motor disturbances in two persons with old cerebellar disease, especially the insufficiency of the postural activity.

Brazil-Medico, Rio de Janeiro

July 9, 1921, **1**, No. 28

*Cladorchinae Parasites. L. Travassos.—p. 357.
*Toxicity of Chenopodium. A. Lellis.—p. 358.
The Question of Public Hygiene. G. Lessa.—p. 360.

Cladorchinae Parasites.—Travassos suggests a more correct classification for the group of parasites which includes the cladorchis of African elephants. He advocates the use of phenol in studying the chitin parts of helminths. He has been using pure phenol in helminthology for fourteen years.

Toxicity of Chenopodium.—Lellis protests against the common assumption that chenopodium is highly toxic. He insists that any disturbances that have followed its use were due to the chloroform or other drug or vehicle given with it. His extensive experience has demonstrated, he says, that adults can take up to 50 drops, but this is not necessary, as 30 drops amply answer the purpose. He gives 10 drops to infants under 12 months and 15 drops up to 18 months; 20 drops from this to 4 years, and 25 drops between 4 and 10, with 30 drops after this. The amount of castor oil ranges from 15 to 35 gm. He has found chenopodium given alone—without chloroform—the best vermicide against different kinds of helminths, and superior even to naphthol for hookworm. He has never had the slightest mishap with it in the two years he has been giving it in this way at ten day periods.

July 23, 1921, **2**, No. 2

*Prophylaxis of Tuberculosis. A. Fontes.—p. 13.

Prophylaxis of Tuberculosis.—Fontes cites an array of international statistics on the prevalence of tuberculosis and on the inherited predisposition and inherited resisting powers.

Archiv für klinische Chirurgie, Berlin

July 30, 1921, **116**, No. 2

Late Results After Operations for Kidney Stones. K. Siedamgrotzky.—p. 201.
Roentgen-Ray Diagnosis of Kidney Calculi. M. Sgalitzer.—p. 231.
Resection of Large Intestine at More Than One Sitting. L. Moszkowicz.—p. 260.
The Intraperitoneal Pressure. J. Keppich.—p. 276.
Treatment of Fractures of Base of Skull. H. Brunner and L. Schönbauer.—p. 297.
Limits of General and Local Anesthesia. W. Denk.—p. 332.
*Cystic Disease of Kidney. O. Rumpel.—p. 344.
*Radiotherapy of Cancer. G. Perthes.—p. 353.

Cystic Kidneys.—Rumpel states that in two of his five cases the cystic degeneration was far advanced in both kidneys and both patients died. A third patient is in bad condition with his one cystic kidney; the other kidney had been removed long before. The fourth patient is still in good health twelve years after removal of one kidney for cystic degeneration. The other kidney seemed to be sound, as also in a second nephrectomy case. His experience testifies that cystic degeneration usually affects both kidneys, but generally in such different degree that operative measures may be justified. In a recent compilation of 127 cases of nephrectomy for this cause, the immediate mortality was 30 per cent. The results are growing constantly better with improved technic. The immediate mortality of nephrectomy has averaged 45 per cent.; partial operations have very rarely been done, and the outcome is not known. Decapsulation plus excision of the cysts has been followed by improvement in the few cases that have been published. Rumpel tried it in one of his cases, but found it was not feasible and concluded with nephrectomy.

Radiotherapy of Cancer.—This is Perthes' review of this subject to open the discussion at the recent German surgical congress. He reiterates that to date operative measures should not be discarded for radiotherapy except with certain carefully selected forms of malignant disease. There are many biologic problems connected with radiotherapy of cancer.

Beiträge zur klinischen Chirurgie, Tübingen

1921, **122**, No. 1

*Peptic Ulcer. P. F. Müller.—p. 1.
*Fibromas in Abdominal Wall. B. v. Klot.—p. 28.
*Ileed Intestine. P. Winnen.—p. 72.
*Hermaphroditism. A. Docnicke.—p. 82.
*Reflex Anuria. E. Staheli.—p. 103.
Wound Diphtheria. F. Balhorn.—p. 122.
Wound Diphtheria. C. Rohde.—p. 132.
*Freezing of Nerve to Arrest Pain. Wiedhopf.—p. 158.
*Mal Perforant. M. Hofmann.—p. 173.
*Origin of Bone Cysts. D. Schuster.—p. 191.
Isolated Fracture of Os Multangulum Maius. F. Mandl.—p. 198.
*Signs of Fracture of Orbit. Kehl.—p. 203.
*Suture of the Esophagus. K. Tiesenhausen.—p. 212.
Lateral Dislocation of Spine. H. Burckhardt.—p. 221.
Causes of Bleeding in Kidney Bed. W. Peters.—p. 228.
*Unilateral Essential Hematuria. E. Keppeler.—p. 236.

Peptic Ulcer.—Müller discusses with two colored plates and an extensive bibliography the histology of peptic ulcer in the stomach and elsewhere. His conclusion is that embryonal factors are responsible for the tendency to ulcer. In the stomach it develops at the junction of normal mucosa and islands of intestinal mucosa, when the developing cells are not quite of the normal type; in the pylorus and duodenum, at the junction of gastric and duodenal mucosa; in the esophagus, at the junction of the esophageal mucosa and islands of stomach mucosa; and in the jejunum, possibly in islands of pancreas tissue. The secretion of glands located in these questionable areas may be abnormal and may digest the surrounding tissue.

Fibroma in Abdominal Wall.—Klot has compiled 408 cases of tumors in the abdominal wall, including 7 in children under 10. They were of twelve different varieties but the fibromas numbered 248; fibrosarcomas, 67; fibromyxomas, 17; sarcomas, 60, and only one endothelioma, angioma and angiosarcoma in the whole list. Recurrence is known in 38 cases; all but 6 were of the sarcomatous group. The differential diagnosis is discussed.

Iced Intestine.—Winnen compares seven cases from the records with a personally observed case of chronic fibrous encapsulated enteritis or *zuckergussdarm*. In his patient, the tough white coating on the bowel in the young woman had entailed several attacks of ileus. He was able to pry off the "icing" at certain points at a laparotomy, which gave great relief. In one case on record the shock from removing too much of the coating proved fatal.

Hermaphroditism.—Doenecke gives two colored plates to sustain his theory that the cause of hermaphroditism is some anomaly in ovum or spermatozoa, which alters the number of chromosomes.

Reflex Anuria.—Stäheli refers to reflex anuria following operations on the biliary apparatus. In his own case it proved fatal the third day after the cholecystectomy on the man of 52. In five similar cases on record the interval before death was from two to four days. Both liver and kidneys shared in the development of the anuria, and in all there had been septic infection of the bile passages. These experiences emphasize the importance of operating without delay.

Freezing the Nerve to Arrest Pain.—Wiedhopf reports clinical experiences and experimental research on the influence of cold on the blocking of nerves to arrest pain, especially after amputations. He uses a carbon dioxid applicator which allows a minus 72 C. temperature, in contrast to the minus 38 C. attainable with ethyl chlorid. The result was excellent, especially at amputations, when all the nerve trunks were thus systematically frozen to ward off operative and after-pains. The first application of the cold is extremely painful. The effect of the chilling extends about 4 cm. above the actually frozen segment. He has applied it to 12 patients. There were no after-pains in 6, but in 4 others they did not seem to be modified. The wound pains were entirely prevented in 3 of the 6 open treated cases; in 2 they were not influenced.

Malum Perforans Pedis.—Hofmann analyzes the reasons for the success or failure of surgical measures in 33 cases, under observation for from five to eight years or more. The underlying disease is usually beyond our reach, and as the tendency persists there is little chance for success with surgical measures. The lesion returns in newly implanted skin as readily as in the original skin. In 4 of the 33 cases the complications proved fatal. One of the patients has spent more than half of the eight years in the hospital.

Bone Cysts.—Schuster adds another to the list of cases in which a large bone cyst developed at the site of a trauma. There had evidently been hemorrhage in the bone marrow, followed by a rarefying and ossifying osteomyelitic process. Since curetting, the cavity seems to be filling up with spongiosa bone.

Fracture of Orbit.—The diagnostic import is emphasized of the way in which the extravasated blood spreads beneath the conjunctiva in case of fracture of the orbit.

Suture of the Esophagus.—Tiesenhausen succeeded in suturing the esophagus in seven cases after resection of a diverticulum or other operation on it. Different methods were used in the experimental work and clinical cases, and four healed without fistula. The suture in tiers was taken first in the submucosa, turning in the mucosa, using catgut. To promote healing, the esophagus was left entirely at rest for a time, feeding with alimentary enemas or through a stomach fistula.

Essential Hematuria.—Keppeler ascribes the hematuria to the paranephritic adhesions found in his two cases. The kidney was removed in both but nothing could be found in it to explain the hemorrhages.

Deutsches Archiv für klinische Medizin, Leipzig

Aug. 30, 1921, **137**, No. 3-4

*Outline of Heart in Diagnosis. W. Neumann.—p. 129.
*Alternating Heart Action. E. Koch.—p. 138.
*Ambard Index with Contracted Kidney. H. Guggenheimer.—p. 159.
*Bilirubin in the Blood Serum. J. S. Thannhauser and E. Andersen.—p. 179.
*Protein-Poor Diets. F. Rabe and R. Plaut.—p. 187.
*Arterial, Capillary and Venous Blood. E. O. Hess.—p. 200.
*Diabetes Insipidus. E. Meyer and R. Meyer-Bisch.—p. 225.
*Speed of Sedimentation of Blood Corpuscles. G. Leendertz.—p. 234.

Outline of Right Heart.—The shadow of the right heart is a smooth curve in normal conditions, and Neumann discusses the significance of the change when the outline shows two smaller curves instead of one single large one. The upper curve represents the enlarged left auricle and the lower the right auricle. This is a typical finding with mitral or aortic stenosis, as he shows by roentgenograms of typical cases, and also in arteriosclerotic contracted kidney. In all of these there is the enlargement of the left auricle which entails the double curve.

Alternating Heart Action.—Koch offers an explanation for the regular alternation of large and small heart beats, the force of the beat continuing unmodified. A case is described, with the modifications under drugs, and the necropsy findings.

The Ambard Index with Contracted Kidney.—Guggenheimer found a normal Ambard constant in 40 per cent. of 73 cases of stationary high blood pressure, that is, above 179 mm. mercury. The constant was slightly above normal in 42.47 per cent. and only in 16.43 per cent. did it reach 0.1 to 0.14. The Ambard index was estimated repeatedly in these cases over a period of about three years, and it kept at about the same figure throughout. The mild and stationary character of the benign nephrosclerosis responsible for the hypertonia was evidenced by the constancy of the Ambard index, which is such a sensitive gage of the functional capacity of the kidneys. In 30 cases of angiosclerotic kidney disease with albuminuric retinitis, the Ambard index was above 0.14 in 56 per cent. and the index kept constantly changing for the worse. The Ambard index therefore classes the cases in the benign or progressive form. His research further demonstrated that there was no direct connection between the changes in the fundus of the eyes and the retention of nitrogenous waste. This seems to prove that the fundus changes are independent of the kidney changes and are not—as hitherto assumed—secondary to the kidney lesions. It is much more probable, he says, that what we have been calling contracted kidney is merely one manifestation of a systemic pathologic condition, a progressive arteriosclerosis which may affect different organs, the retina, the brain or the kidneys, as the case may be. In his 30 cases of rapidly progressive contracted kidney, cerebral hemorrhage occurred in 14, that is, in nearly 50 per cent. while it occurred in only 10 of the 72 cases with stationary hypertonia.

Bilirubin in Blood Serum.—A modification of the Ehrlich-Pröscher test for bilirubin is described as superior to Hijmans van den Bergh's modification, and the chemical reaction involved is explained.

Protein-Poor Diet.—Rabe and Plaut record the metabolic and other findings in a man of 40 who had been a vegetarian for several years, and fasted periodically. The amount of calories regulated by the appetite was below that which the basal metabolism called for, and yet the man did not lose in weight or energy. He said that he became a vegetarian because he had noticed that in certain sport associations the members that excelled were vegetarians.

Comparative Simultaneous Research on the Arterial, Capillary and Venous Blood.—Hess reports research in this line

in the normal and in pathologic conditions, and under the influence of certain drugs, also in the interchange of fluids between the blood and tissues as the pressure was raised with epinephrin.

Diabetes Insipidus.—Tests of different kinds were applied to the young woman with diabetes insipidus of the hyperchloridemic type. The striking action of pituitary extract (posterior lobe) on the exchange of salt and water between the blood and tissues and between the blood and the urine were studied in particular, and the findings confirmed by experiments on dogs. The sodium chlorid content of the blood subsided to normal under its influence, while the percentage in the urine doubled, and the output of urine declined. The results show that pituitary extract acts on the tissues as well as on the kidneys. In a case of pure polydipsia, no effect from the pituitary extract could be detected, and there was no concentration of the urine—as occurs in true diabetes insipidus—during days of restriction of intake of fluid.

Speed of Sedimentation of Blood Corpuscles.—Leendertz noted more rapid sedimentation in cases of infectious diseases and of tumors, while it was much retarded in cyanotic conditions and with insufficiency of the kidneys. His research further demonstrated some connection between the presence of antibodies and the accelerated speed of sedimentation. It seems to be a general law that immune bodies in the blood plasma modify the physical-chemical conditions in a way which finds expression in acceleration of the sedimentation process as the suspension stability is affected.

Deutsche medizinische Wochenschrift, Berlin

Aug. 4, 1921, **47**, No. 31

Parenteral Activation of Cell Function. W. Weichardt.—p. 885.
Metabolism in Obesity. F. Rolly.—p. 887. To be conc'd.
*Carbohydrate Diet in Diabetes Mellitus. W. Falta.—p. 889.
Successful Treatment of Case of Gonococcus Sepsis with Meningococcus Serum. J. Citron.—p. 891.
*Pneumothorax from Perforated Gastric Ulcer. H. Schottmüller.—p. 892.
Systolic Wave of Venous Pulse. H. Gerhartz.—p. 893.
*Acute Thrombosis of Superior Vena Cava. H. Arons.—p. 894.
Hemoglobinophilic Bacilli in Distemper of Dogs. O. Olsen.—p. 895.
Catarrhal Infection of Eustachian Tubes Seemingly Akin to Swimming Pool Conjunctivitis. K. Amersbach.—p. 896.
Operative Cure of Painful Cracking Sound of Scapula. Görres.—p. 897.
*Roentgen Irradiation of Inflammation of Sweat Glands of Axilla.—J. Basch.—p. 898.
Induced Widening of Birth Tract During Birth. Blumreich.—p. 899.

Practical and Historical Aspects of Carbohydrate Diet in Diabetes Mellitus.—Falta gives a general survey of the treatment of diabetes mellitus, in which he agrees that the most important requirement is that the sugar content of the food intake shall be adapted, as far as possible, to the patient's ability to assimilate it. Whether proteins or carbohydrates should predominate, depends mainly on the degree of acidosis present; for carbohydrates have an antiketoplastic and proteins a ketoplastic effect (that is, when the carbohydrate metabolism is limited). If the assimilation of sugar is fairly good, we can give a large portion of the sugar content of the diet in the form of proteins, as sufficient sugar is assimilated to prevent the ketoplastic effect of the proteins from becoming operative. If the assimilation of sugar is weaker, the amount of protein must be reduced, and it is then advisable to alternate between periods with a diet poor in proteins and a moderate carbohydrate content, on the one hand, and periods with a strict diet, in order to keep down the acidosis, which naturally increases during the strict diet. If the assimilation of sugar is at a very low level, the proteins must be restricted more and more. It goes without saying that the protein equilibrium of the body must be preserved as long as possible, by intercalating periods of strict diet even though very short. In far advanced cases the protein must be reduced to a minimum. Falta considers it an error if, as was the case this year at the Congress of Internal Medicine, it is maintained that in such cases the albumin equilibrium should be continued to be preserved by an increased protein intake. He argues, on the contrary, that acidosis immediately increases and that the increasing elimination of acidosis products occasions an increased loss of calories; also protein metabolism is abnormally increased, as the storage of albumin with such minimal assimilation of carbohydrates is no longer possible. He refers to his work, "Die Mehlfrüchtekur bei Diabetes mellitus," for numerous examples of this.

Subphrenic Pneumothorax Resulting from Perforated Gastric Ulcer.—Schottmüller states that perforation of gastric ulcers with escape of gastric contents into the subphrenic space, occurs more frequently than was formerly supposed, without the formation of a subphrenic abscess. In two of the three cases he describes, no subphrenic suppuration occurred, but only what he terms a subphrenic pneumothorax, which disappeared spontaneously in a few days. From his observations on the three reported cases Schottmüller holds that the extensive adhesions that are so often encountered, in operations for gastric ulcer, between the liver, colon, omentum and stomach, are certainly the results of a perforated ulcer. In such cases, no doubt the formation of an ulcer is prevented by the germicidal action of the acid gastric juice.

Acute Thrombosis of the Superior Vena Cava.—Arons reports a case of acute thrombosis of the superior vena cava, which he states is exceedingly rare as compared with the chronic and subchronic forms. His case teaches that cyanosis developing suddenly, combined with swelling of the upper extremities, the head and the neck should lead one to suspect an acute thrombosis of the superior vena cava.

Roentgen Irradiation for Inflammation of Sweat Glands of Axilla.—Basch recommends that every case of inflammation of this character, irrespective as to what stage it is in, be treated with roentgen rays, as this is the preferred treatment for this affection. The symptoms disappear at once and with good cosmetic results, without the use of drugs or bandages. A cure is effected in much shorter time than by any other method of treating hidradenitis.

Medizinische Klinik, Berlin

Aug. 7, 1921, **17**, No. 32

*Genital Tuberculosis in the Female. Fuhrmann.—p. 956.
*The Myogenous Nature of the Heart Beat. L. Haberlandt.—p. 958.
Abdominal Operations on the Pregnant. H. Hellendall.—p. 962.
*Syphilis and Marriage. L. Kleeberg.—p. 962.
*Acute Ileus. Gottschalk.—p. 964.
*Secondary Alveolar Pyorrhea. B. Rosenthal.—p. 965.
Turpentine in Treatment of Skin and Genital Lesions. Isacson.—p. 966.
Sulphur Baths in Cardiovascular Disease. L. Weiss.—p. 967.
*Plant Nature of Neurofibromas. L. Merk.—p. 970.
Treatment of Genital Discharge. W. Benthin.—p. 971. Conc'n.

Genital Tuberculosis in the Female.—Fuhrmann remarks that tuberculosis is responsible for about 3 per cent. of the lesions of the female genital organs, but in 90 per cent. it is secondary to tuberculous lesions elsewhere. The prognosis therefore depends on the primary lesion, and treatment should be directed to this. The lesion may spontaneously retrogress, and operative treatment is called for only when the focus is primary or there is acute vital danger. We must bear in mind that fully 33 per cent. of all cases of tuberculous peritonitis heal spontaneously. If no tendency to healing is evident, he advises a simple median incision, suturing afterward.

The Vagus and the Heart Beat.—The experiments on frogs related apparently confirm anew the myogenous nature of the formation and conduction of the heart beat impulse in vertebrates.

Syphilis and Marriage.—Kleeberg's text is a woman of 39 who has been apparently free from manifestations of syphilis since 1903 when she was given a course of inunctions. She has passed through fifteen pregnancies, and nearly all the children and fetuses showed inherited syphilis, most severe in the fifteenth child. He emphasizes the vast difference between the effects of syphilis in the man and of syphilis in the woman, when it is a question of marriage. Every woman with a history of syphilis, regardless of the length of the interval since infection, should be given a course of energetic treatment when she becomes pregnant, unless there is absolute certainty that abortive treatment had eradicated the disease. Otherwise the woman is liable to transmit syphilis to her offspring throughout her entire reproductive life.

Acute Ileus.—In four of the five cases reported, the acute ileus yielded to injection of fluid high in the bowel and Priessnitz compresses to the abdomen, when an operation had seemed inevitable. The patients were three robust middle-aged men, one infant, and one woman. The woman was the only one in the group that required operative relief, a loop

of intestine having become incarcerated in the right inguinal canal.

Secondary Alveolar Pyorrhea.—Rosenthal remarks that pyorrhea has been held responsible for rheumatism, etc., but we must not forget that febrile rheumatism and certain constitutional diseases may entail alveolar pyorrhea secondarily. In some cases reported the alveolar disease fluctuated with the ups and downs of the primary disease. This was particularly evident in a case of glomerular nephritis, the pyorrhea ceasing completely as the general condition improved, but flaring up anew with every aggravation of the kidney disease.

Botanical Nature of Neurofibromatosis.—Merk has noted that some of the tissues forming the neurofibroma of Recklinghausen's disease take certain stains in a way that indicates a botanical nature. No human or animal connective tissue turns violet under sulphuric acid. This is a property of plant tissue.

Mitteil. a. d. Grenzgeb. d. Med. u. Chir. Jena

1921, **33**, No. 5

*Treatment of Exstrophy of the Bladder. R. Demel.—p. 533.
*The Lanz Point in Appendicitis. V. E. Mertens.—p. 557.
Treatment of Chronic Joint Disease. T. Finger.—p. 569.
*Cerebrospinal Fluid in Diagnosis of Brain Tumors. C. Lange.—p. 582.
*Underfeeding as Factor in Sciatica. H. Schlesinger.—p. 611.
*Spontaneous Fractures from Underfeeding. A. Szenes.—p. 618.
*Calcium in the Blood in Osteomalacia. A. Szenes.—p. 649.
"Chronic Paronychia." J. Volkmann.—p. 661.

Results of Operative Treatment of Exstrophy of the Bladder.—Demel has been reexamining 5 of the 11 patients treated for exstrophy of the bladder in Eiselsberg's clinic since 1901. Four died in less than two weeks, and one survived for only twenty-eight months. In none of the cases was the incontinence cured, and only in one did the fistula finally heal, notwithstanding the repeated plastic operations. The Maydl operation had a high mortality; the age of the patients was generally unfavorable. Under 5 the mortality of 400 Maydl operations on record averaged 41 per cent.; over 20, from 50 to 72 per cent., but between 6 and 10 it was only 18 per cent. If no attempt is made to cure the incontinence, the danger of ascending nephritis can be practically excluded by implanting the ureters in the penis groove or making a ureter fistula in the lumbar region or in the anterior abdominal wall. The ultimate outcome is very good in one of Demel's cases nearly three years since the ureters were implanted in the rectum (Petersen-Kümmell) in the boy of 3. By leaving a circle of tissue around the ureter mouth, its sphincter function is retained. A series of plastic operations in 3 cases did not succeed in curing the fistula or only temporarily, and the incontinence is as bad as before. The other patients had the ureters implanted in the sigmoid flexure or rectum and all succumbed to infection of the kidney.

The Lanz Point in Appendicitis.—Mertens discusses the tenderness at the point of junction between the appendix and cecum, Lanz' point, as compared with McBurney's point. In 309 patients, 27 had tenderness at the latter point only; 88 at both points, and 194 at the Lanz point only.

The Cerebrospinal Fluid in Diagnosis of Brain Tumors.—Lange has examined over 5,000 specimens of cerebrospinal fluid in the last twelve years, including a large number of brain tumor cases. In 5 recent ones the diagnosis was confirmed by the findings in the lumbar puncture fluid. In 30 brain tumor cases as much as 20 or 30 c.c. of fluid had been sent in, and no instance of disturbance from withdrawal of such a large amount of fluid was known. The attending physicians were always surprised when told the actual amount. It is always underestimated, while 5 c.c. is ample for all tests of the fluid. On suspicion of a brain tumor, 1 or 2 c.c. will suffice. There is no specific change in the fluid from the presence of the tumor, but on account of the capillary hemorrhages the fluid shows changes which differ from those under other conditions. The cytodiagnosis is of no aid, and the Wassermann is useless or even misleading. The Lange goldsol reaction and the yellow tint are the only dependable criteria of a tumor.

Differential Diagnosis of Sciatica and Coxitis.—Schlesinger found an unsuspected hip-joint process responsible in a number of recent cases of sciatica at Vienna. In others a long latent hip-joint process had flared up. Localized changes in the bones suggested foci of osteomalacia. The disturbances seem to be traceable to inadequate food, as they retrogressed under proper food and cod liver oil with phosphorus.

Spontaneous Fractures from Inadequate Food.—Szenes relates that 12 young people and 3 older ones with spontaneous fractures have recently been given treatment in Eiselsberg's service at Vienna. There was a history of rachitis in the family in 5, and in the patient himself in 6. The femur was the seat of the fracture in 5, the tibia in 8, including 2 cases with both. Pronounced osteoporosis was evident in all, and the inadequate food is evidently the explanation of this new clinical picture.

Calcium in the Blood.—While making the investigations recorded in the preceding abstract, Szenes determined the calcium content of the blood, finding it below the physiologic standard. This may possibly explain the delay in the coagulation of the blood noted in all these cases.

Münchener medizinische Wochenschrift, Vienna

July 29, 1921, **68**, No. 30

*Therapeutic Revulsion. H. Quincke.—p. 935.
Treatment of Tuberculosis with So-Called Turtle Tubercle Bacilli. H. F. O. Haberland.—p. 936.
Nonspecific Treatment of Tuberculosis. J. Weicksel.—p. 938.
Investigations on Blood Coagulation. E. Wöhlisch.—p. 941.
Experiences with Modified Mastic Reaction. W. Goebel.—p. 943.
*Treatment of Gastric Crises in Tabes. Rembe.—p. 945.
Origin and Treatment of Eclampsia. A. Greil.—p. 945.
The Practitioner and the Appendicitis Question. H. Doerfler.—p. 946.
Change in Position of Internal Organs in Different Attitudes as Aid in Diagnosis. Hügelmann.—p. 948.
Spontaneous Pneumothorax After Futile Attempt to Effect Artificial Pneumothorax. P. Sedlmeyr.—p. 949.
*Diphtheria Bacilli in Sputum. F. Port.—p. 949.
Multiple Allelomorphism. W. Weinberg.—p. 950.
So-Called Arthritic Spirochetosis. H. Reiter.—p. 950.
Treatment of High Blood Pressure. Grassmann.—p. 951.

Therapeutic Revulsion.—While admitting that active revulsion has fallen into oblivion during the last generation, nevertheless Quincke is convinced of the effectiveness of the cautery in many cases of spondylitis. He describes his technic and reports good results in forty-seven cases. He employs the cautery only in severe and intractable cases, after other means have failed, burning with a hot iron under general anesthesia a strip from 8 to 14 cm. long and 2 or 3 cm. wide, about 4 cm. to each side of the median line of the back.

Treatment of Gastric Crises in Tabes.—Rembe describes a case of tabes in a man past 40, in which by means of paravertebral injections of antipyrin the gastric crises were checked, and have not reappeared during the nine months that have elapsed since the last injection. The patient feels perfectly well.

Diphtheria Bacilli in the Sputum.—In a previous article Port referred to the possibility of persons with diphtheria-like bacilli in the sputum becoming spreaders of diphtheria. He now states that his later experience has taught him that they do not constitute a menace to their surroundings, nor does the presence of such bacilli seem to be of any particular significance to those carrying them.

Wiener klinische Wochenschrift, Vienna

July 28, 1921, **34**, No. 30

Inaugural Lecture in Pathology Course. H. Pfeiffer.—p. 363. Cont'd.
*Mange in Rats Used in Experimental Research. J. Fiebiger.—p. 364.
Modern Methods of Wound Treatment. P. Albrecht.—p. 366.
Treatment of Psoriasis. V. Pranter.—p. 368.
Experience as Prisoner of War. F. Hutter.—p. 368. Cont'n.

Mange in Rats and Its Relation to Steinach's Rejuvenation Experiments.—Fiebiger takes issue with Steinach as regards the latter's statement that the bare spots on the backs of his experimental rats were to be regarded as signs of beginning senescence, and contends that such bare spots are the result of a circumscribed disease process; for example, an eczema. He says further that bald spots as indicative of age alone are not found in animals other than anthropoid apes. Since, then, fall of hair in rats is not due to senescence but to a pathologic process, the new growth of hair over the bare spots could not have been the result of the rejuvenation experiments but must have been due to the healing of the disease process. Fiebiger therefore insists that Steinach's experiments should be repeated with unobjectionable experimental animals.

Zentralblatt für innere Medizin, Leipzig

July 30, 1921, **42**, No. 30

*Cardiovascular Disturbances in Congenital Syphilis. L. Hahn.—p. 601.

Cardiac and Vascular Disturbances in Congenital Syphilis. In connection with a study of a large number of cases of congenital syphilis, Hahn describes characteristic vascular processes, and claims to have demonstrated that the majority of the cases of vascular neuroses are referable to congenital syphilis and to syphilitic injuries of the fetus.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

July 30, 1921, **2**, No. 5

Experiences with Sulpharsenol. Papegaaij and Rinsema.—p. 560.
*Elimination of Hippuric Acid in Kidney Disease. I. Snapper.—p. 565.
*The Factors Responsible for Hemoptysis. H. B. Boekhoudt.—p. 573.
*Occultism. I. Zeehandelaar.—p. 581.
Large Tumor in Diaphragm. C. P. van Nes.—p. 583.
*Fracture of Rib. C. ten Horn.—p. 587.
*Cause of Tabes, Dementia Praecox, etc. J. A. van Trotsenburg.—p. 591.
*Detachment of Retina in Nephritis. W. A. Weisfelt.—p. 595.
Neo-Arsphenamin in Malaria. J. M. H. A. Martens.—p. 601.
Present Status of Parenteral Protein Therapy. L. A. Faber.—p. 603.
Medical Impressions of Foreign Lands. C. D. de Langen.—p. 637.

Elimination of Hippuric Acid in Kidney Disease.—Snapper states that with disease in the kidney causing retention of urea, the elimination of hippuric acid after test injection of 5 gm. of sodium benzoate showed extreme disturbance in his 7 cases in this group. It proceeded normally in 3 cases of nephritis or nephrosis without retention of urea in the blood serum, and also in 6 cases of arteriosclerotic contracted kidney likewise without retention of urea. The details of the 16 cases are given in full.

Causal Factors in Hemoptysis.—Boekhoudt relates his own case history, as he has had symptoms of fibrous phthisis since the age of 26. He has made a special study of the circumstances attending each hemorrhage from the lungs, and has become convinced that, not high blood pressure, but stagnation in the blood vessels, especially in the bronchi, is the main factor in hemoptysis. On four special occasions described in detail, he had been angered, but had repressed his wrath, refraining from expressing it by word or deed—an inhibition along the whole line. After an interval of two to four hours came the hemorrhage. The blood was usually venous, and the inhibition must have induced stasis in the bronchial veins with consequent diapedesis if not actual rupture. This assumption is confirmed by the sensation of oppression and discomfort in the chest which had preceded the hemoptysis in each instance, and which others have noted in similar conditions. It suggests, he adds, that digitalis might relieve in cases of precordial distress under other conditions. Some clinicians make a practice of giving digitalis in case of hemoptysis, but from another reasoning, aiming to reduce the hypothetic high blood pressure which they accept as the cause for the hemorrhage, as necropsy has so often failed to disclose any rupture in any vessel.

The emotional and physical factors, which have hitherto been regarded as contributing to the assumed high pressure, may have cooperated, but by another mechanism, the shallower breathing, stasis, turgor and diapedesis induced. One young man, for example, had had a hemorrhage from the lungs nine days before a fall, hurting his back. Ten hours after the fall he had another hemorrhage from the lung. His physician assumed that a blood vessel had been ruptured by the fall, but Boekhoudt thinks it more probable that the dread of such a mishap from the trauma, the anxious keeping still to ward it off, and breathing gently, were what in reality brought it on by the stasis thus induced in the bronchial veins. Those who have never had hemoptysis are unable to imagine the anxiety and strain to avoid anything that can bring it on again. Another argument in favor of stasis as the main factor in hemoptysis is that it does not occur with acute bronchitis. The inflammatory hyperemia seems to prevent stasis. At least, he has never known of an instance of hemoptysis during an attack of acute bronchitis.

He argues further that the reason why the hemorrhage usually stops abruptly when the blood has been coughed up, is because the coughing has shaken up the parts and put an end to the stasis. The conditions are exactly the opposite in epistaxis. Blowing the nose starts it to bleeding again, but coughing corrects stasis and may arrest the hemorrhage. The benefit from an emetic may possibly be due to the movements of the chest which accompany the effort to vomit, the forcible expiration that follows retching. Measures to prevent stasis and promote deep breathing and coughing will tend also to ward off aspiration pneumonia.

Occultism.—Zeehandelaar comments on the danger for the unbalanced from the prevailing cult of materialization of spirits, referring in particular to Kolb's report of a family of eleven persons who have all developed insanity recently, requiring internment. He adds that no one can expect to enlighten the public unless he knows something about the subject in hand, but we can be certain that in the near future much of these "occult phenomena" will be "deoccul ted."

Fracture of Ribs.—Ten Horn has found that fractured ribs free from complications heal better when no attempt is made to immobilize them mechanically. His main reliance is on morphin. This he gives in large doses, possibly up to the maximal dose. This relieves the pain, and respiration proceeds unhampered. Morphin also reduces the need for oxygen as the play of the muscles is weakened by it, but its greatest benefit is by allowing coughing without pain. The patient coughs up the secretions freely and the danger of pneumonia is thus warded off. Pneumonia is responsible for most of the deaths after fracture of ribs.

Cause of Tabes Dorsalis, Dementia Paralytica and Praecox.—Van Trotsenburg is inclined to explain the lack of success in these conditions from treatment for syphilis as the result of some superposed or underlying infection, most probably tuberculosis. With dementia praecox there is much to sustain the assumption that tuberculosis is the primary disease.

Transient Detachment of the Retina in Nephritis.—The boy of 14 seemed to have quite recovered from an attack of acute glomerular nephritis with edema, but four years later further symptoms developed, more of the nature of contracted kidney. During an exacerbation of the chronic uremia, bilateral detachment of the retina occurred but without choked disk. The uremic coma and convulsions persisted for eighty and forty-five hours on the two occasions; the detachment of the retina occurred at the second attack, not long before death.

Acta Medica Scandinavica, Stockholm

Aug. 23, 1921, **55**, No. 4

*Râles After Healing of Lung. C. Löwenhjelm.—p. 323.
*Brain Sarcoma Successfully Removed. A. Barkman.—p. 333.
*Hypertonia and Kidney Disease. E. Kylin.—p. 368.
*The Blood Pressure During Sleep. C. Müller.—p. 381.

Râles Persisting After Clinical Healing.—Löwenhjelm remarks that at necropsies of persons with healed tuberculous processes, dying from other causes, more attention should be paid to the history of persisting râles. He describes three cases in which the clinical cure had been doubted on account of râles continuing to be heard, but necropsy confirmed the complete cure of the old pulmonary lesion. Söderberg published a similar case in 1909. In one of Löwenhjelm's cases the lumen of the bronchi was unusually large and the sclerous apex was clogged with desquamated epithelium, thus providing the physical conditions for râle production. A chronic bronchitis in the vicinity of the indurated healed process might also and probably often does perpetuate râles. What we call by this name may sometimes be in reality friction sounds from pleuritic processes or their relics. In short, he declares, we are inclined to ascribe too much importance to persisting râles. (In German.)

Successful Removal of Brain Tumor.—After five years of left jacksonian epilepsy came proximal paralysis of the left arm, cortical, abdominal, muscle, and bladder disturbances, and neuritis of the auditory nerve but no choked disk. After the removal of the brain tumor the muscles in the hand on the paralyzed side atrophied. The woman had also presented symptoms of chronic nephritis for several years. The sarcoma in the region of the posterior central convolution of the right frontal lobe was easily shelled out. It measured 55 by 45 by 50 mm. and the paresis gradually retrogressed and for eleven months the patient felt well and strong. Then came a chill and other symptoms indicating an abscess in the brain. The local tenderness of the skull had aided in differentiating the tumor from chronic uremia. The circumscribed atrophy of the smaller muscles of the hand from a lesion in the first central motor neuron is suggestive. (In German.)

High Blood Pressure and Kidney Disease.—Kylin asserts that the evidence to date does not prove that the kidneys are primarily responsible for a high blood pressure. Instead of incriminating the kidneys for the hypertonia, we must regard the kidney lesions as the result of the injury of the vessels which is caused by or possibly is the cause of the hypertonia, whether due to increased resistance in the arterial system or in the capillary system. With acute diffuse glomerular nephritis, the capillaries are sinuous and swollen, while they are seen to stretch out long in the so-called benign nephrosclerosis. The response to the water freshet test also differs in these two conditions, and likewise the capillary pressure. These facts sustain the assumption, he continues, that with glomerular nephritis the capillary system participates in the cause of the rise of the blood pressure, while with benign kidney sclerosis the arterial system alone is involved. Kylin's assertions have been confirmed by others in regard to the rise in blood pressure and edema as earlier symptoms of the kidney disease than the appearance of albumin, casts and blood corpuscles in the urine. This fact may throw light on the etiology of diffuse glomerulitis. His tests demonstrated that dilatation of the capillaries and rise in capillary pressure run parallel. The capillaries are regulated by a motor mechanism of their own, separate from the artery mechanism. If the capillary mechanism gets out of order and the capillaries become dilated and strained, edema may develop in consequence, in the same way as the edema in stasis from heart disease. In conclusion Kylin remarks that the primal cause of the hypertonia is still a mystery. His article is in English.

Measure of the Blood Pressure in Sleeping Subject.—Müller thinks that the drop in blood pressure during sleep has a diagnostic significance that has not been appreciated hitherto. The findings in thirty-three normal children under 15 and sixty-four adults are compared with the findings in twenty-five cases of high blood pressure with or without kidney disease. The difference between the amount of the day and night urine is also instructive, as well as the difference between the blood pressure waking and sleeping. The interesting and unexpected findings raise a host of questions which he is unable to answer. It is evident from this research that the blood pressure fluctuates during the twenty-four hours more than has been realized hitherto. Another fact brought out is that pathologic changes in the blood pressure long precede other symptoms from the kidneys or cardiovascular system. (In German.)

Hygiea, Stockholm

July 31, 1921, **83**, No. 14

*Paroxysmal Hemoglobinuria. E. Salén.—p. 449. Conc'n No. 15, p. 497.

Apparent Cure of Paroxysmal Hemoglobinuria from Chilling.—Salén compares the results of his own research on paroxysmal hemoglobinuria with those of others, emphasizing that there are evidently different types, the only feature in common being the paroxysmal occurrence of the hemoglobinuria. He has had two typical cases under observation for a long time, in men of 50 and 46, the first a syphilitic. The hemoglobinuria in each is brought on by getting chilled. He noted that urobilin appeared in the urine of the first patient in the morning and persisted during the day but grew less and disappeared at night. A few hours after a cold foot bath, urobilin appeared in large amounts in the urine but without hemoglobinuria, albuminuria or any of the symptoms of the paroxysmal hemoglobinuria. If the patient was protected against chilling by being kept in bed, the reaction was negative. In the other case, the reaction for urobilin was negative on rising but if the man went out into the cold, urobilinuria followed. Given a cold foot bath, the reaction was strongly positive. Salén then ascertained the slightest degree of chilling that was followed by urobilinuria, and had the man take a foot bath at this temperature. Repeating this procedure, the man gradually became accustomed to the cold foot bath so that lower and lower temperatures could be borne without urobilin or hemoglobin appearing in the urine, and without hemoglobinemia. Salén found further that the number of erythrocytes diminished as the urobilinuria appeared. From 5,800,000 it dropped to 3,460,000 after the cold foot bath, but climbed to nearly the former figure in ten or eleven days.

These experiences showed that paroxysmal hemoglobinuria is made up of several elements beyond the mere presence of hemoglobin in the urine, and that the attack may occur even without the hemoglobinuria. In the "latent" form, the mechanism works more continually and more economically for the organism, and this is the more common form. His laboratory experiments demonstrated that different degrees of cold affected different classes of blood corpuscles, the older ones feeling the effect first. In ninety-five cases of paroxysmal hemoglobinuria reported since 1904 there was a history of syphilis in 85 per cent. of the cases in which the history was known, and the Wassermann reaction was positive in 95 per cent. It seems probable therefore that syphilis is responsible for the changes in the blood which make paroxysmal hemoglobinuria possible. Treatment as for syphilis therefore seems logical and has been often applied, but Salén does not know of any instance of its having restored the blood findings to normal. On the other hand, he has apparently completely cured his second patient by training him to hold one foot in cold water every day for a few minutes until now he can stand a foot bath at 9 C. for thirty minutes without any of the former symptoms or changes in the blood. He still keeps up his daily routine of a foot bath at 14 or 15 C. and has no further attacks, but time alone will show whether the cure is permanent.

Aug. 16, 1921, **83**, No. 15

*Pulmonary Tuberculosis or Interlobar Empyema. G. Karström.—p. 517.

Pulmonary Tuberculosis or Interlobar Empyema?—The differential diagnosis was difficult in the girl of nearly 4 in Karström's case, everything pointing to an interlobar empyema except the diazo and tuberculin reactions, and the amphoric tone of the respiration sounds which were heard higher in the back. The course of the case and necropsy confirmed the pulmonary disease and showed that there was no trace of interlobar empyema.

Ugeskrift for Læger, Copenhagen

Aug. 25, 1921, **83**, No. 34

*Match Box Dermatitis and Conjunctivitis. C. Rasch.—p. 1119.
*Calcium Phosphate Deposits Around Joints. B. Pontoppidan.—p. 1121.
*Chlorids in Blood. N. R. Christoffersen.—p. 1126.
*Pneumothorax. Von Thun.—p. 1130.

Safety Match-Box Dermatitis.—Rasch has encountered thirteen new cases of dermatitis from carrying or handling a box of safety matches, and relates that one of the more recent cases was quite severe, the dermatitis on fingers, neck and face lasting for two weeks and being accompanied by severe conjunctivitis, the eyelids swollen together. The aspect and course is like that with poisoning from *Primula obconica*. The matches were all of Swedish make with the trade mark of a ship, and the poisoning is ascribed to the phosphorus sesquisulphid (P_4S_3) used in them when amorphous phosphorus could not be obtained. In men the dermatitis generally corresponds to the trousers pocket, but women who smoke a great deal and use many matches are affected in the fingers and conjunctiva.

Calcium Phosphate Deposits.—Pontoppidan reports a case of subcutaneous nodules of calcium phosphate around joints. The patient was a woman of 64, and the nodules developed deep in the tissues and increased in size until they burst the skin and allowed the escape of a chalky fluid or a small mass of solid calcium phosphate. In some of the few similar cases on record there were symptoms suggesting a pituitary lesion. In this case, sclerodermia had preceded the first appearance of the nodules, as also in Weber's case; Raynaud's disease in another.

Determination of Chlorids in the Blood.—Christoffersen describes how to apply the Bang micromethod to determine the chlorids in the blood with a dependable technic.

Tension Pneumothorax.—In two of Thun's cases, puncture relieving the local accumulation of air from the valve opening into the lung was followed by a cure. The changes in the opening after evacuation of the air prevent its functioning further as a valve. In the third case the effects of the trauma otherwise proved fatal. In another case the abdomen became enormously distended with odorless air in a man with heart disease. No cause for the pneumoperitoneum was found even at necropsy not long after.